Childhood Trauma, Dissociation, Post-Traumatic Stress Disorder and Cognitions in Clinical and Non-Clinical Populations

Desiré Furnes

Date of submission: 5th March 2018
Word count: 27,705 (excluding appendices)

Doctoral Programme in Clinical Psychology
University of East Anglia

Thesis Abstract: "Childhood Trauma, Dissociation, Post-Traumatic Stress Disorder and Cognitions in Clinical and Non-Clinical Populations"

Desiré Furnes
Year of submission: 2018

Background: Childhood Trauma has been linked to a wide range of psychopathologies. However, although individuals diagnosed with psychosis and individuals diagnosed with BPD have been found to overlap in terms of their trauma histories, and similar trauma-related mechanisms have been explored in both groups, these two clinical groups are often studied in isolation. The main aim of this thesis was to explore how trauma and trauma-related mechanisms are related to the development of psychotic and borderline symptomatology from both a diagnostic and transdiagnostic perspective.

Method: First, theoretical accounts of critical concepts and of BPD and psychosis were reviewed. Second, a systematic review approached psychotic symptomatology from a transdiagnostic perspective, in which the relationship between childhood trauma, cognitive appraisals and psychotic-like experiences were examined in samples drawn from different psychosis populations. Third, an empirical study examined the relationship between childhood traumas, trauma-related mechanisms and psychotic and borderline symptomatology from both a diagnostic and transdiagnostic perspective. Finally, an attempt was made to integrate theoretical accounts with the thesis findings, and research and clinical implications were discussed.

Results: Findings from the systematic review supported previous evidence suggesting that there is a dose-response relationship between trauma severity and symptom severity, and that specific trauma types may be linked to specific symptoms. These findings were confirmed in the empirical paper (and outlined in an additional results chapter). The findings also suggested an important role of trauma-related mechanisms and supported transdiagnostic predictions. Specifically, dissociation and post-traumatic symptomatology may partially explain development of psychosis and borderline symptomatology, respectively.

Conclusion: The relationship between childhood trauma and psychosis and borderline symptomatology is becoming well established. This thesis portfolio emphasised the benefits of approaching symptomatology from a transdiagnostic perspective, as well as the advantages of using more complex statistical approaches when exploring these relationships.

Acknowledgements

I want to express my deepest gratitude to all the participants who took their time to contribute to this research. Without your courage to share, this project would not have been possible. A huge thank you to Cat for doing this project together with me and for countless hours with discussions and hard work that made this project possible. Also, thank you to Dr Joanne Hodgekins and Prof Siân Coker for many hours with supervision, guidance and knowledge sharing throughout this thesis process. Your input has been fundamental to this project.

Thank you to Dr Liam Gillian for contributing with data collection and to Prof David Peck for his input on statistical analyses. I also want to thank Dr Knut Dyrstad for his input on path modelling. Thank you to Dr Deirdre Williams and Dr Michelle Painter for collaborating on this project. A huge thank you to all clinical teams that has contributed to recruitment, and for prioritising this even though their days were already very busy.

I also want to thank my supervisors and colleagues in Norway, Dr Liv Mellesdal, Dr Rolf Gjestad, Dr Rune A. Kroken, Helga-Marit Ness and David Lovret, for their engagement with the project and for all the time they took to discuss both theoretical and statistical aspects of the project.

Finally, I want to thank my parents, my stepparents, my siblings and their beautiful babies, and my friends, for their motivation throughout these last years. Your support, kind words and helpful reflections has helped shaped this thesis and my own experiences throughout the process. A special thank you to my sister Hege who I have shared so many interesting discussions with, to my dad for his interest and intellectual input, and to my mum who are always there when I need love and motivation to keep going.

Dedication

To all those who fight so hard to recover

Contents

Summary of Portfolio

Chapter 1: This chapter is a general introduction to the thesis. It outlines and discuss the theoretical accounts of the most important concepts within the thesis; childhood maltreatment, complex psychological trauma and trauma-related disruptions in psychobiological development. In addition, it describes how trauma is linked to psychotic and borderline symptomatology. Finally, the discussion attempts to integrate this understanding, identify gaps in the literature and describe the overall aim of the thesis.

Chapter 2: The next chapter is a systematic review focusing on the relationship between trauma, cognitive appraisals and psychotic experiences. Interestingly, although cognitive biases are a core element of Cognitive Behavioural Therapy for psychosis, there has been no systematic review of how trauma-related appraisals influence psychotic symptomatology, although they potentially maintain both psychotic symptoms and comorbid post-traumatic symptomatology. Twelve studies are reviewed and narratively synthesised before strengths, limitations and future directions are discussed.

Chapter 3: This chapter function as a bridge between the systematic review and the empirical paper in Chapter 4. The overall aim of this brief chapter is to integrate the findings from the review with the aims of the empirical paper.

Chapter 4: This chapter describes a case-control study that explores the relationship between trauma, trauma-related mechanisms and psychosis and borderline symptomatology from both a diagnostic and transdiagnostic perspective. First, it explores whether individuals diagnosed with Borderline Personality Disorder and individuals diagnosed with a Psychotic Disorder differ in expression of these variables. Specifically, the two clinical groups are compared on type and severity of childhood

trauma and on dissociative symptoms, trauma-induced cognitions and current post-traumatic symptomatology. The two groups are also compared to a control group drawn from the general population, which functions as a comparison group. Second, it investigates whether differential expression of trauma-related mechanisms can explain differences in symptomatology, irrespective of diagnostic category. To examine the potential mediating role of several trauma-related mechanisms, path modeling is employed to develop two separate formative models exploring how these trauma-related mechanisms play a role in psychotic and borderline symptomatology.

Chapter 5: This chapter provides additional methodological information regarding the study. The aim of this chapter is to describe how the empirical study outlined in Chapter 4 was conducted in tandem with another trainee clinical psychologist. Thus, as explained in this chapter, the study outlined here only represents some of the trauma-related mechanisms explored in the three samples whilst other trauma-related mechanisms, attachment and emotion regulation specifically, are reported in another thesis.

Chapter 6: Additional results are outlined in this chapter. Specifically, two formative models were developed to explore conclusions drawn in the systematic review about how specific types of childhood trauma may be linked to specific types of psychotic symptoms.

Chapter 7: This final chapter attempts to integrate the thesis aims and findings with the theoretical accounts described in the first chapter. Strengths and limitations, as well as clinical and research implications, are finally discussed.

CHAPTER 1 – General Introduction

Reviewing theoretical accounts of trauma, trauma-related mechanisms, psychosis and borderline personality disorder

Word count: 3,879 (excluding references)

1.1. Child maltreatment and complex psychological trauma

Severe and persistent maltreatment in early years can have a detrimental impact on a child (Ford & Courtois, 2009). Healthy psychobiological functioning is disrupted and the likelihood of developing mental health difficulties increases drastically (Ford & Courtois, 2009; Mueser et al., 1998). Maltreatment includes acts of omission or commission, i.e. neglect or abuse respectively, from primary caregivers (Claussen & Crittenden, 1991). Specifically, the child may experience physical, sexual or emotional abuse, or physical or emotional neglect, and the co-occurrence of multiple types of maltreatment is common (Bernstein et al., 2003). Disturbingly, as many as one in seven children experience maltreatment and in 80% of the incidents the child's own parents are responsible for these fundamental betrayals of trust and nurturing (Ford & Courtois, 2009; Van der Kolk, 2017).

Defining trauma is complex and has been highly debated in the literature, often with a basis in the trauma definition outlined in the Diagnostic and Statistical Manual of Mental Disorders (DSM; American Psychiatric Association [APA], 2013). Issues have focused on what the definition of trauma should encompass, as trauma can be broadly or narrowly defined. For instance, it has been debated whether trauma should be defined by the traumatic event, the effect on the individual, or both (Briere & Scott, 2014; Cicchetti & Toth, 2005). Also, traumatic stressors lie on a continuum and vary in magnitude, complexity, frequency, duration, predictability and controllability (Weathers & Keane, 2007), which makes it difficult to objectively define stressor severity. Yet another issue has been regarding whether both direct and indirect exposure should be incorporated into the trauma definition (May & Wisco, 2015).

The most recent conceptualisation of trauma in DSM-V was substantially modified, in which subjective responses to trauma has been removed from the definition

and includes both direct and indirect exposure to traumatic events (Pai, Suris & North, 2017). It is however generally accepted that psychological trauma resulting from a single traumatic event should be differentiated from complex psychological trauma (Van der Kolk, 2017), which is often the consequence of severe and persistent maltreatment (Van der Kolk, 2017).

Psychological trauma is characterised by the overwhelming emotional response to a single unexpected traumatic event perceived to be out of the individual's control, such as an assault or an accident (Van der Kolk, 2003; McCann & Pearlmann, 1990). Although the individual's normal functioning may be disrupted, this tends to be temporary and most individuals regain normal functioning after some time (Elwood, Hahn, Olatunji & Williams, 2008). Some individuals will develop post-traumatic stress disorder (PTSD) in response to a single traumatic event and trauma severity has been found to predict PTSD severity (Steil & Ehlers, 2000). It has been argued that PTSD should be understood as a natural response to an overwhelming and uncontrollable situation (McHugh & Treisman, 2007). However, this has been disputed based on the fact that only some people develop PTSD whilst others do not (Friedman, Resick & Keane, 2007). The discrete behavioural and biological responses that individuals display in response to single event trauma tends to be captured in the criteria of PTSD outlined in the DSM-IV (APA, 2013).

In contrast, there seem to be consensus that the current PTSD diagnosis alone does not capture the disruption in developmental elements that is evident in complex psychological trauma (e.g. Cook et al., 2017; Ford & Courtois, 2009; Van der Kolk, 2017). Complex psychological trauma, or developmental trauma, is much more extreme in its nature and better describes the child's response to repeated interpersonal maltreatment. As a consequence, individuals with childhood maltreatment histories

tend to receive a range of comorbid psychiatric diagnoses, often in addition to a diagnosis of PTSD, that describe affective or behavioural elements of their presentation (Van der Kolk, 2017).

According to Van der Kolk (2017), this is problematic as it would suggest that PTSD and comorbid difficulties occur independently from each other and that clinicians may then employ interventions that are not suitable to treat the underlying cause of the individual's presentation. Importantly, the Complex Trauma taskforce of the National Child Traumatic Stress Network (see Van der Kolk, 2017 for more information) has initiated the work to conceptualise a new diagnosis called Developmental Trauma Disorder, aiming to capture the range of intra- and interpersonal difficulties that an adult may experience in response to an early maladaptive environment.

Importantly however, is the changes made to the recently published 11th revision of the International Classification of Diseases (ICD-11; World Health Organization [WHO], 2018), which makes a distinction between PTSD and complex PTSD (cPTSD). The cPTSD diagnosis attempts to capture complex symptomatology in response to severe and chronic trauma and can be employed when all core symptoms of PTSD are evident, in addition to severe problems with affect regulation, persistent negative self-beliefs and persistent interpersonal difficulties (WHO, 2018). Whilst the 5th edition of DSM-V (APA, 2013) did not include a diagnosis of complex trauma, revisions were made to, at least to some extent, acknowledge some of the complexity observed in response to complex trauma (Friedman, 2013) and recognise the role of interpersonal relating, emotion regulation and negative self-concept. Specifically, the PTSD diagnosis was removed from the chapter on anxiety disorders and added into a new chapter named "Trauma and Stressor-Related Disorders" and a new dissociative PTSD subtype was integrated (Friedman, 2013).

1.2. Disruption in healthy psychobiological development

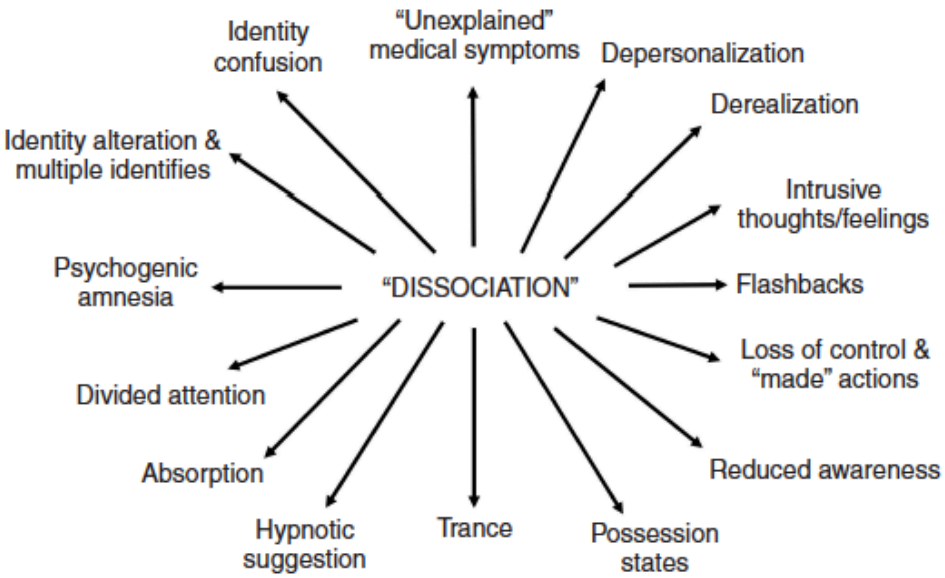
The immediate and long-term consequences of maltreatment in early years are profound. As the child is repeatedly concerned with survival, normal psychobiological development becomes disrupted in a range of domains (Kinniburgh, Blaustein, Spinazzola, & Van der Kolk, 2017). Cook et al. (2017) has identified attachment, biology, affect and behaviour regulation, dissociation, cognition, and self-concept as the primary domains of impairment. Two important cognitive-affective processes, namely dissociation and cognitive appraisals, are of specific relevance in this thesis and will be explored in more depth.

1.2.1. Dissociative mechanisms

Dissociation can be defined as a compartmentalisation of experience, in which an experience is stored in memory as isolated fragments, in the form of sensory perceptions, affective states or behavioural re-enactments, rather than as a unitary whole (Van der Kolk & Fisler, 1995). Dissociation can function as a coping mechanism in response to trauma, in which experiences that are so overwhelming and unbearable that it cannot be integrated into the conscious mind and result in the child "disconnecting" from their environment. Five dissociative symptoms, amnesia, identity confusion, identity alteration, depersonalisation and derealisation, tend to drive this process (Steinberg, 1994). Although dissociation can be an adaptive coping mechanism during moments of unescapable physical or psychological pain, it is likely that repeated activation of dissociative mechanisms results in fragmentation and disintegration of memories, perceptions, thoughts, feelings and the sense of self (Macfie, Cicchetti & Toth, 2001). Not surprisingly then, is distinct alterations in states of consciousness often evident in chronically traumatised children (Van der Kolk, 2017).

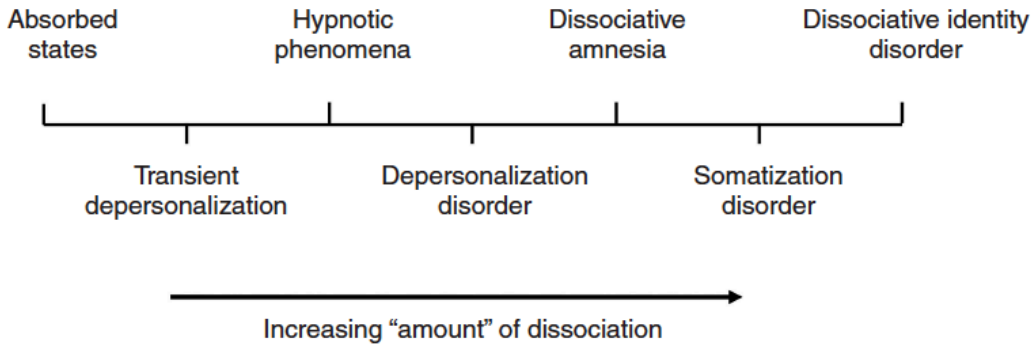
Several dissociation theories have been proposed (Steele & van der Hart, 2009) and dissociation has been emphasised as an important variable in developmental trauma models of psychopathology, especially in disorders resulting from early relationally traumatic experiences (Schimmenti & Caretti, 2016). The unitary model of dissociation (Cardeña, 1994) argues that dissociation is an underlying psychological mechanism that describes a range of psychological symptoms, states and processes (see Figure 1). This understanding of dissociation is in line with The Standardized Clinical Interview for DSM-IV Dissociative Disorders (SCID-D; Steinberg, 1994), which outline the five symptoms described above.

Figure 1. "Psychological symptoms, states and processes associated with the dissociation label" (adapted from Brown, 2006, p. 8).



The unitary model has also informed the dissociative continuum model (see Figure 2), which provides the basis of the Dissociative Experience Scale (DES; Bernstein & Putnam, 1986). DES assesses both non-pathological and pathological dissociation and is used to estimate differences in trait dissociation (Brown, 2006).

Figure 2. “Hypothetical dissociative continuum” (adapted from Brown, 2006, p. 9).



An alternative conceptualisation of dissociation was suggested by Holmes et al. (2005). They reviewed the literature and found preliminary support for a dichotomous understanding, in which detachment and compartmentalisation represent two qualitatively distinct dissociative phenomena. This is in contrast to the continuum model, which assumes that all dissociative phenomena are qualitatively similar but differing in degree (Holmes et al., 2005). Specifically, Holmes et al. (2005) argued that the concept of detachment incorporates depersonalisation, derealisation and similar out-of-body experiences, in which an altered state of consciousness is experienced. They emphasised that dissociative mechanisms associated with trauma and PTSD falls within this concept, and that these states can be acute, temporary experiences or develop into more chronic conditions (Holmes et al., 2005).

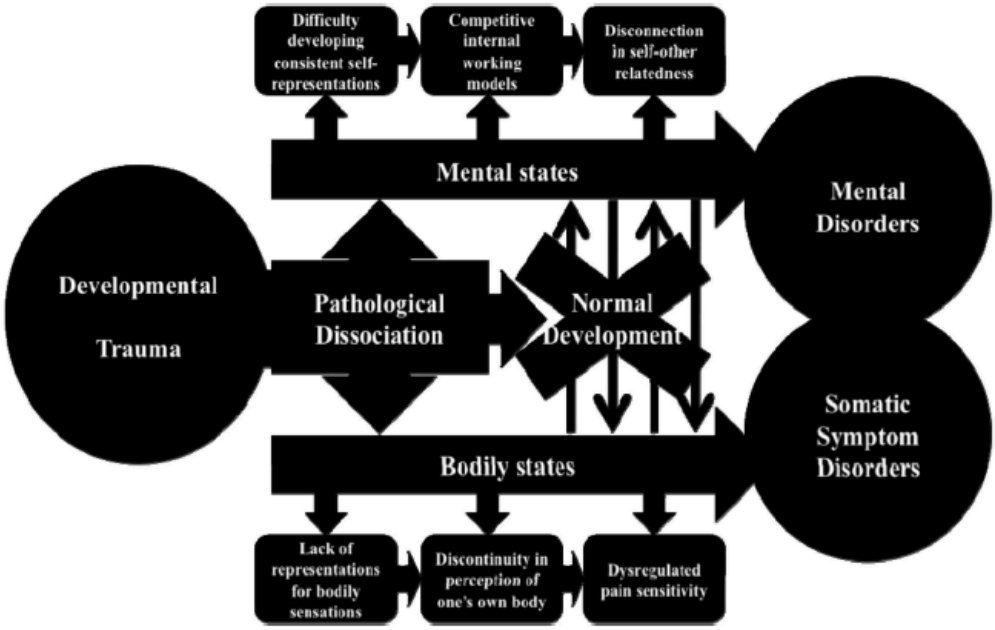
In contrast, Holmes et al. (2005) include dissociative amnesia, somatoform dissociation and “unexplained” neurological symptoms within the concept of compartmentalisation. Pseudo-hallucinations and Dissociative Identity Disorders (DID) can also be placed within this category. They suggest that compartmentalisation is representing a problem with controlling certain functions, in which information associated with these functions become compartmentalised. Importantly however, is the

ability of these functions to continue to operate normally, but outside deliberate control. Amnesia occurring in response to detachment and compartmentalisation would then be explained by different principles; whilst retrieval deficits can cause amnesia in response to compartmentalisation, encoding deficits can explain amnesia in response to detachment (Holmes et al., 2005). Thus, both concepts can be understood as representing two independent continuums, which can differ in severity and functional impairment (Holmes et al., 2005).

Importantly, Schimmenti & Caretti (2016) has recently proposed a developmental trauma model of dissociation (see Figure 3), which attempts to describe how developmental trauma and dissociation is linked to development of mental health disorders. They describe pathological dissociation as directly emerging from developmental trauma, which disrupts normal development. They suggest two inter-related psychopathological pathways: the first pathway (i.e. mental states) represents development of consistent self-representations, which is impaired due to abuse and neglect in the attachment relationship.

The result is then unintegrated internal working models of self and others that disrupts the child's ability to form relationships between self and others. Unintegrated self-states and disconnection from others are then highly likely to result in a mental health disorder (Schimmenti & Caretti, 2016). Disruption in the second pathway (i.e. bodily states) due to pathological dissociation could lead to a disconnection between the bodily states. This disconnection can disrupt development of healthy emotion regulation strategies, cause distortions in the perception of one's own body and disconnect the mind from sensations such as pain (Schimmenti & Caretti, 2016).

Figure 3. "A developmental trauma model of dissociation and psychopathology" (adapted from Schimmenti & Caretti, 2016, p. 118)



Although dissociation is seen as a core feature of PTSD, the nature of this relationship has been highly debated, as some individuals with PTSD do not experience dissociative symptoms (Waelde, Silvern, Carlson, Fairbank & Kletter, 2010). This may be partly explained by dissociation being more strongly linked to repetitive interpersonal trauma compared to single-event trauma. Also, the role of dissociation in PTSD may depend on trauma severity and at which developmental stage the trauma occurs (Waelde et al., 2010).

1.2.2. Trauma-Induced Cognitive Appraisals

Traumatic experiences influence the way people perceive themselves, others and the world. These trauma-induced appraisals are also a core feature of PTSD (Dunmore, Clark & Ehlers, 2001; Epstein, 1991; Roth & Newman, 1991). However, as only a third develop PTSD (Kessler et al., 1995), it has been argued that individual differences in

cognitive style can pose as a vulnerability factor (Elwood, Hahn, Olatunjo & Williams, 2009; Foa & Rothbaum, 1998; McNally, 1998).

Core schemas develop in childhood and individuals that have experienced severe and persistent maltreatment are particularly likely to develop stable maladaptive schemas, which again give rise to negative automatic thoughts (Schmidt, Joiner, Young & Telch, 1995). For instance, individuals with chronic PTSD tend to tend to attribute the traumatic experiences as having internal, stable and global causes (Wenninger & Ehlers, 1998). Two basic dysfunctional cognitions have been linked to chronic PTSD; "the world is extremely unsafe" and "I am completely incompetent". Foa & Rothbaum (1998) suggest that these cognitions could either be the result of similar pre-existing schemas being confirmed by the traumatic event (i.e. in victims of repetitive trauma), or because individuals have difficulties assimilating the event into pre-existing schemas (about the world being safe and themselves being competent). In contrast, individuals that perceive the trauma as time-limited and controllable are more likely to recover (Ehlers & Steil, 1995). These responses are more in line with the existing PTSD diagnosis, as discussed above.

The Post-Traumatic Cognitions Inventory (Foa, Ehlers, Clark, Tolin & Orsillo, 1999) was developed as a measure of trauma-related cognitions and the authors argued that that it is superior in its ability to discriminate between traumatised individuals with and without PTSD. Specifically, the measure consists of three subscales assessing negative cognitions about self, negative cognitions about the world and self-blame, which are considered to maintain PTSD (Foa et al., 1999).

1.3. Complex psychological trauma and psychopathology

Child maltreatment places the child at high risk of developing a wide range of psychopathology, such as anxiety, depression, and somatisation (Cicchetti & Toth,

1995; Malinosky-Rummel & Hansen, 1993). In addition, multiple interpersonal traumas in childhood tend to produce a complex constellation of symptoms (Dutra, Callahan, Forman, Mendelsohn & Herman, 2008), which complicates assessment and treatment. The relationship between trauma and development of borderline personality disorder (BPD) has been established through a wealth of research since the emergence of Linehan's (1993) biosocial model. However, the importance of childhood trauma in psychosis has emerged more recently, as it historically has been considered as a biologically based mental health disorder (Read, Fosse, Moscowich and Perry, 2001).

1.3.1. Psychosis

Schizophrenia, which is characterised by positive symptoms, such as hallucinations and delusions, and negative symptoms, such as avolition and diminished emotional expression (DSM-V; APA, 2013), has traditionally been viewed as a unitary diagnostic entity. Historical models, including the diathesis-stress model of psychosis (e.g. Zubin & Spring, 1977) have mainly focused on how a genetic deficit can predispose individuals to a heightened sensitivity to stress. However, this view has recently been challenged and it has been argued that psychosis should rather be considered a symptom that can manifest in many ways (Stevens, Spencer & Turkington, 2017). Research evidence from the last two decades has gradually introduced the possibility that environmental triggers, and traumatic experiences in particular, seem to play a role in the development of psychosis (e.g. see Morrison, Frame & Larkin, 2003 for a review).

In 2001, Read, Perry, Moscowich and Connolly proposed a modified diathesis-stress model, the Traumagenic Neurodevelopmental Model, which attempts to integrate biological and psychological mechanisms that describe the relationship between trauma and psychosis. In this model, in contrast to arguing that psychotic individuals are

genetically vulnerable to stress, they suggest that these individuals have *experienced* disproportionate amount of stress. In short, they review the literature on structural and functional brain abnormalities in abused children and emphasise its similarity to abnormalities identified in adults diagnosed with schizophrenia. In 2013, Read and colleagues revisited the model and reviewed the literature published since 2001. They argued that findings supported their hypothesis that heightened sensitivity to stress can be caused by childhood trauma, as opposed to being purely inherited.

There is now some consensus in the literature that there are different psychosis subtypes originating from different pathways. While the endogenous pathway is more in line with the traditional biologically driven assumption, and predominantly characterised by negative symptoms, there is also a second pathway from childhood trauma to predominantly positive symptoms (Read et al., 2001; Kilcommons, Morrison, Knight & Lobban, 2008). In line with this, and as will be discussed later in detail, research evidence now suggests that there is a dose-response relationship between trauma and positive psychotic symptoms, in which severity of trauma predicts severity of symptoms (e.g. Mayo et al., 2017; Trauelsen et al., 2015), and trauma-related symptom specificity, in which types of trauma relates to types of positive symptoms (see Gibson, Alloy & Ellman, 2016 for a review).

Further, Stevens and colleagues (2017) have very recently proposed four subgroups of trauma in psychosis, namely traumatic psychosis, neurodevelopmental psychosis, psychotic PTSD and psychosis-induced PTSD. In the first subgroup, psychotic symptoms are described as resulting from childhood trauma, which leads to a schematic vulnerability, which again increases the risk of psychotic symptoms in response to later triggers. In contrast, the neurodevelopmental psychosis subgroup is characterised by a chronic genetic and/or organic predisposition, which emphasises a

link between specific genes and neural abnormalities. The vulnerabilities within this group can also increase the likelihood of developing PTSD (Stevens et al., 2017). The third subgroup, psychotic PTSD, relates to psychotic symptoms that develop after the emergence of PTSD symptoms. Although the type of psychotic symptoms may be similar to the traumatic psychosis subgroup, they always emerge post development of PTSD. In contrast, in the psychosis-induced PTSD subgroup, symptoms of PTSD emerge post psychosis (Stevens et al., 2017).

The first two subgroups correspond well with the two pathways described above. The only apparent difference is that Stevens et al. (2017) approach the pathways from a trauma-angle and describe how, in the second pathway, psychotic experiences can result in trauma. In line with suggestions above, Stevens et al. (2017) emphasise an important role of positive symptoms in the first subgroup, traumatic psychosis. In addition, they argue for a congruent relationship between trauma history and hallucinatory experiences, which is in line with the symptom-specificity assumption, and the role of dissociation and emotions, such as depression, anxiety, guilt and shame, are also discussed. Arguably, the first, third and fourth pathway can be understood as subgroups *within* the trauma-induced psychosis pathway.

In conclusion, differentiation and categorisation between subgroups of psychosis does highlight the complexity of assessing and treating trauma-induced psychosis. However, recent theoretical accounts of psychosis have provided a rationale for why psychosis should be considered as symptoms and not a unitary diagnostic entity, and why assessment of trauma histories should routinely be integrated into generic psychosis assessment (Read et al., 2001; National Institute for Health and Care Excellence [NICE], 2014).

1.3.2. Borderline Personality Disorder

Individuals diagnosed with BPD display significant impairments in personality functioning at an intra- and interpersonal level, characterised by unstable self-image, excessive self-criticism, chronic feelings of emptiness, interpersonal sensitivity and dysregulation, and negative affectivity (DSM-V; APA, 2013). In addition, dissociative tendencies in response to psychological stress are not uncommon (DSM-V; APA, 2013). Due to the complexity of their presentation they often present at acute mental health services (Mellesdal el al., 2014; Mellesdal et al., 2015; NICE, 2009).

According to Linehan's (1993) biosocial theory of personality functioning, it is the interaction between invalidating early environment and a dysfunctional emotion regulation system that results in BPD symptomatology. Specifically, children may be biologically predisposed to become emotionally vulnerable and when their emotional needs are not met, they do not learn how to identify and regulate their emotions in a healthy way. Negative emotions then become overwhelming and uncontrollable, and combined with an inability to verbally communicate distressing emotions, dysfunctional behaviours often become a coping strategy. Thus, according to Linehan (1993), emotional dysregulation can explain why self-harming behaviours, both with and without suicidal intent, becomes a frequent behavioural pattern in individuals diagnosed with BPD.

Linehan (1993) and Gratz (2003) describe how non-suicidal self-harming behaviours, which often function as self-regulation or communication channel for distress (Paris, 2002; 2016), can be misperceived as a manipulative attention strategy. Importantly, this misperception may lead to unfortunate ruptures in the therapeutic alliance between the individual and the professional (Linehan, 1993). It is thus important to understand the functions of these behaviours to avoid misconceptions that

hinder successful treatment. Further, some individuals diagnosed with BPD suffers from chronic suicidality, often described as a consistently higher baseline suicidal risk (Bryan & Rudd, 2006). Thus, the distinction between suicidal and non-suicidal behaviours is often not clear. Paris (2016) argues that this is linked to ambivalence as to whether they want to live or die. Treatment of chronic suicidality in BPD is thus different from the treatment approach taken towards acute suicidality, as they serve different functions (see Bryan & Rudd, 2006 and Paris, 2004 for a description of treatment implications).

Due to the high levels of trauma histories in individuals diagnosed with BPD, the high comorbidity of PTSD and frequent admissions in acute psychiatric settings, it has been argued that that treatment should target both PTSD and BPD to reduce the risk of severe and repetitive self-harming behaviours (Mellesdal et al., 2015).

1.4. Rationale for systematic review and empirical study

An early maladaptive environment disrupts a child's psychobiological development and causes impairments in a variety of domains (Ford & Courtois, 2009). Severely maltreated children have to direct all their attention towards survival – and their response to this, their coping mechanisms, will reflect the risk they have been exposed to (Ford & Courtois, 2009). Importantly, symptoms later in life are likely to reflect their previously adaptive coping mechanisms that have become maladaptive in different contexts (Ford & Courtois, 2009). Consistent with this idea is the growing literature supporting a potential causal link between childhood maltreatment and development of psychotic and borderline symptoms (Ball & Links, 2009; Hardy et al., 2016).

However, although some studies have begun to investigate the comorbid presentation of psychosis and BPD, which has been linked to the overlap of trauma

(Barnow et al., 2010), the comorbidity of PTSD in both BPD and psychosis are often ignored or under-reported (Ford & Courtois, 2009; Lommen & Restifo, 2009). Currently, it is the symptoms that individuals display, their cognitive, affective and behavioural presentation, that guides the diagnostic process. However, it has been argued that this approach ignores the importance of understanding these symptoms as trauma-related adaptations (Ford & Coutois, 2009). Although there has been a growing interest in exploring similar trauma-related variables in both groups, the diagnostic separation of symptoms has likely resulted in these two clinical groups being studied in isolation. If, however, psychotic and borderline symptoms develop in response to trauma, it is possible that symptomatological differences observed between the groups would rather reflect different coping mechanisms in response to trauma. It is also possible that symptoms would be present in traumatised individuals *across* diagnostic membership.

The exploration of symptom expression from both a diagnostic and a transdiagnostic perspective, and integration of knowledge derived from both approaches, is important to gain a more holistic understanding of symptomatology. The main aim of this thesis is thus to explore the relationship between trauma, trauma-related mechanisms and psychotic and borderline symptoms from both perspectives. First, a systematic review will examine whether trauma-related cognitive appraisals are linked to psychotic experiences. Based on the assumption that psychotic symptoms are potentially caused by traumatic experiences, a transdiagnostic approach will also be employed, in which studies exploring these relationships in different samples will be included.

Second, the empirical paper has two main goals; in the first instance, it will be examined whether the two clinical groups, separated by diagnosis, differ in type and

severity of trauma and, second, whether they differ in levels of dissociation, current PTSD symptoms and post-traumatic appraisals. The two clinical groups will also be compared to a control group, which is included as a reference group. Potential differences in trauma type and severity *could* indicate that different symptoms result from differences in trauma histories. Further, groups will be collapsed to explore, from a transdiagnostic perspective, whether different symptoms can be explained by differential expression of trauma-related mechanisms.

1.5. References

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5®)*. Arlington, VA: American Psychiatric Pub.

Ball, J. S., & Links, P. S. (2009). Borderline personality disorder and childhood trauma: evidence for a causal relationship. *Current psychiatry reports*, *11*(1), 63-68. https://doi.org/10.1007/s11920-009-0010-4

Barnow, S., Arens, E. A., Sieswerda, S., Dinu-Biringer, R., Spitzer, C., & Lang, S. (2010). Borderline personality disorder and psychosis: a review. *Current psychiatry reports*, *12*(3), 186-195. https://doi.org/10.1007/s11920-010-0107-9

Bernstein, E. M., & Putnam, F. W. (1986). Development, reliability, and validity of a dissociation scale. *The Journal of nervous and mental disease*, *174*(12), 727-735. DOI: 10.1097/00005053-198612000-00004

Bernstein, D. P., Stein, J. A., Newcomb, M. D., Walker, E., Pogge, D., Ahluvalia, T., ... & Zule, W. (2003). Development and validation of a brief screening version of the Childhood Trauma Questionnaire. *Child abuse & neglect*, *27*(2), 169-190. https://doi.org/10.1016/S0145-2134(02)00541-0

Briere, J. N., & Scott, C. (2014). *Principles of trauma therapy: A guide to symptoms, evaluation, and treatment (DSM-5 update)*. Sage Publications.

Brown, R. J. (2006). Different types of "dissociation" have different psychological mechanisms. *Journal of Trauma & Dissociation*, *7*(4), 7-28. https://doi.org/10.1300/J229v07n04_02

Bryan, C. J., & Rudd, M. D. (2006). Advances in the assessment of suicide risk. *Journal of clinical psychology*, *62*(2), 185-200. DOI: 10.1002/jclp.20222

Cardeña, E. (1994). The domain of dissociation. In Lynn, S. J. & Rhude, J. W. (Eds). *Dissociation: Clinical and theoretical perspectives* (pp. 15-31). New York, US: Guildford Press.

Cicchetti, D., & Toth, S. L. (1995). A developmental psychopathology perspective on child abuse and neglect. *Journal of the American Academy of Child & Adolescent Psychiatry*, *34*(5), 541-565. https://doi.org/10.1097/00004583-199505000-00008

Claussen, A. H., & Crittenden, P. M. (1991). Physical and psychological maltreatment: Relations among types of maltreatment. *Child abuse & neglect*, *15*(1-2), 5-18. https://doi.org/10.1016/0145-2134(91)90085-R

Cook, A., Spinazzola, J., Ford, J., Lanktree, C., Blaustein, M., Cloitre, M., ... & Mallah, K. (2017). Complex trauma in children and adolescents. *Psychiatric annals*, *35*(5), 390-398. https://doi.org/10.3928/00485713-20050501-05

Dunmore, E., Clark, D. M., & Ehlers, A. (2001). A prospective investigation of the role of cognitive factors in persistent posttraumatic stress disorder (PTSD) after physical or sexual assault. *Behaviour research and therapy*, *39*(9), 1063-1084. https://doi.org/10.1016/S0005-7967(00)00088-7

Dutra, L., Callahan, K., Forman, E., Mendelsohn, M., & Herman, J. (2008). Core schemas and suicidality in a chronically traumatized population. *The Journal of nervous and mental disease*, *196*(1), 71-74. DOI: 10.1097/NMD.0b013e31815fa4c1

Ehlers, A., & Steil, R. (1995). Maintenance of intrusive memories in posttraumatic stress disorder: A cognitive approach. *Behavioural and cognitive psychotherapy*, *23*(03), 217-249. https://doi.org/10.1017/S135246580001585X

Elwood, L. S., Hahn, K. S., Olatunji, B. O., & Williams, N. L. (2009). Cognitive vulnerabilities to the development of PTSD: A review of four vulnerabilities and the proposal of an integrative vulnerability model. *Clinical Psychology Review*,*29*(1), 87-100. https://doi.org/10.1016/j.cpr.2008.10.002

Epstein, S. (1991). Impulse control and self-destructive behavior. In Lipsitt, L. P. & Mitnick L. L. (Eds). *Selfregulatory behavior and risk-taking: Causes and consequences*. New Jersey: Ablex Publishing Corporation.

Foa, E. B., Ehlers, A., Clark, D. M., Tolin, D. F., & Orsillo, S. M. (1999). The posttraumatic cognitions inventory (PTCI): Development and validation. *Psychological assessment*, *11*(3), 303. DOI:10.1037/1040-3590.11.3.303

Foa, E. B., & Rothbaum, B. O. (1998). *Treating the trauma of rape: Cognitive-behavioral therapy for PTSD*. New York: Guilford Press.

Ford & Courtois. (2009). Defining and understanding complex trauma and complex traumatic stress disorders. In Courtois, C. A., & Ford, J. D. (Eds.). (2009). *Treating complex traumatic stress disorders: An evidence-based guide*. New York: Guilford Press.

Friedman, M. J. (2013). Finalizing PTSD in DSM‐5: Getting here from there and where to go next. *Journal of traumatic stress*, *26*(5), 548-556. https://doi.org/10.1002/jts.21840

Friedman, M. J., Keane, T. M., & Resick, P. A. (Eds.). (2007). *Handbook of PTSD: Science and practice*. New York: Guilford Press.

Gibson, L. E., Alloy, L. B., & Ellman, L. M. (2016). Trauma and the psychosis spectrum: a review of symptom specificity and explanatory mechanisms. *Clinical psychology review*, *49*, 92-105. https://doi.org/10.1016/j.cpr.2016.08.003

Gratz, K. L. (2003). Risk factors for and functions of deliberate self-harm: An empirical and conceptual review. *Clinical Psychology: Science and Practice*, *10*(2), 192-205. DOI: 10.1093/clipsy.bpg022

Hardy, A., Emsley, R., Freeman, D., Bebbington, P., Garety, P. A., Kuipers, E. E., ... & Fowler, D. (2016). Psychological mechanisms mediating effects between trauma and psychotic symptoms: the role of affect regulation, intrusive trauma memory, beliefs, and depression. *Schizophrenia bulletin*, *42*(suppl_1), S34-S43. https://doi.org/10.1093/schbul/sbv175

Holmes, E. A., Brown, R. J., Mansell, W., Fearon, R. P., Hunter, E. C., Frasquilho, F., & Oakley, D. A. (2005). Are there two qualitatively distinct forms of dissociation? A review and some clinical implications. *Clinical psychology review*, *25*(1), 1-23. https://doi.org/10.1016/j.cpr.2004.08.006

Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C. B. (1995). Posttraumatic stress disorder in the National Comorbidity Survey. *Archives of general psychiatry*, *52*(12), 1048-1060. DOI:10.1001/archpsyc.1995.03950240066012

Kilcommons, A. M., Morrison, A. P., Knight, A., & Lobban, F. (2008). Psychotic experiences in people who have been sexually assaulted. *Social psychiatry and psychiatric epidemiology*, *43*(8), 602-611. https://doi.org/10.1007/s00127-007-0303-z

Kinniburgh, K. J., Blaustein, M., Spinazzola, J., & Van der Kolk, B. A. (2017). Attachment, Self-Regulation, and Competency: A comprehensive intervention framework for children with complex trauma. *Psychiatric annals*, *35*(5), 424-430. https://doi.org/10.3928/00485713-20050501-08

Linehan, M. M. (1993). *Cognitive Behavioral Treatment of Borderline Personality Disorder.* New York: Guilford Press

Lommen, M. J., & Restifo, K. (2009). Trauma and posttraumatic stress disorder (PTSD) in patients with schizophrenia or schizoaffective disorder. *Community mental health journal*, *45*(6), 485-496. https://doi.org/10.1007/s10597-009-9248-x

Macfie, J., Cicchetti, D., & Toth, S. L. (2001). The development of dissociation in maltreated preschool-aged children. *Development and Psychopathology*, *13*(02), 233-254.

Malinosky-Rummell, R., & Hansen, D. J. (1993). Long-term consequences of childhood physical abuse. *Psychological bulletin*, *114*(1), 68. http://dx.doi.org/10.1037/0033-2909.114.1.68

May, C. L., & Wisco, B. E. (2016). Defining trauma: How level of exposure and proximity affect risk for posttraumatic stress disorder. *Psychological trauma: theory, research, practice, and policy*, *8*(2), 233. http://dx.doi.org/10.1037/tra0000077

Mayo, D., Corey, S., Kelly, L. H., Yohannes, S., Youngquist, A. L., Stuart, B. K., ... & Loewy, R. L. (2017). The role of trauma and stressful life events among individuals at clinical high risk for psychosis: a review. *Frontiers in psychiatry*, *8*. https://doi.org/10.3389/fpsyt.2017.00055

McCann, I. L., & Pearlman, L. A. (1990). *Psychological trauma and the adult survivor: Theory, therapy, and transformation*. London: Psychology Press.

McHugh, P. R., & Treisman, G. (2007). PTSD: A problematic diagnostic category. *Journal of anxiety disorders*, *21*(2), 211-222. https://doi.org/10.1016/j.janxdis.2006.09.003

McNally, R. J. (1998). Experimental approaches to cognitive abnormality in posttraumatic stress disorder. *Clinical psychology review*, *18*(8), 971-982. https://doi.org/10.1016/S0272-7358(98)00036-1

Mellesdal, L., Gjestad, R., Johnsen, E., Jørgensen, H. A., Oedegaard, K. J., Kroken, R. A., & Mehlum, L. (2015). Borderline Personality Disorder and Posttraumatic Stress Disorder at Psychiatric Discharge Predict General Hospital Admission for Self-Harm. *Journal of traumatic stress*, *28*(6), 556-562. DOI: 10.1002/jts.22053

Mellesdal, L., Kroken, R. A., Lutro, O., Wentzel-Larsen, T., Kjelby, E., Oedegaard, K. J., ... & Mehlum, L. (2014). Self-harm induced somatic admission after discharge from psychiatric hospital–a prospective cohort study. *European Psychiatry*, *29*(4), 246-252. https://doi.org/10.1016/j.eurpsy.2013.06.006

Morrison, A. P., Frame, L., & Larkin, W. (2003). Relationships between trauma and psychosis: a review and integration. *British Journal of Clinical Psychology*, *42*(4), 331-353. DOI: 10.1348/014466503322528892

Mueser, K. T., Goodman, L. B., Trumbetta, S. L., Rosenberg, S. D., Osher, F. C., Vidaver, R., ... & Foy, D. W. (1998). Trauma and posttraumatic stress disorder in severe mental illness. *Journal of consulting and clinical psychology*,*66*(3), 493. http://dx.doi.org/10.1037/0022-006X.66.3.493

National Institute for Health and Clinical Excellence. (2009). Borderline Personality Disorder: Recognition and Management. Retrieved September 2017 from https://www.nice.org.uk/guidance/cg78

National Institute for Clinical Excellence. (2014). Psychosis and schizophrenia in adults: prevention and management. *NICE guidelines [CG178]*. Retrieved January 2018 from https://www.nice.org.uk/guidance/cg178

Pai, A., Suris, A. M., & North, C. S. (2017). Posttraumatic stress disorder in the DSM-5: Controversy, change, and conceptual considerations. *Behavioral Sciences*, *7*(1), 7. https://doi.org/10.3390/bs7010007

Paris, J. (2002). Chronic suicidality among patients with borderline personality disorder. *Psychiatric Services*, *53*(6), 738-742. https://doi.org/10.1176/appi.ps.53.6.738

Paris, J. (2004). Is hospitalization useful for suicidal patients with borderline personality disorder? *Journal of personality disorders*, *18*(3: Special issue), 240-247. https://doi.org/10.1521/pedi.18.3.240.35443

Paris, J. (2016). Kronisk suicidalitet ved ustabil personlighetsforstyrrelse: hvorfor det er behov for særskilte tilnærminger i behandlingen. *Suicidologi*, *21*(3).

Read, J., Fosse, R., Moskowitz, A., & Perry, B. (2014). The traumagenic neurodevelopmental model of psychosis revisited. *Neuropsychiatry*, *4*(1), 65. DOI: 10.2217/npy.13.89

Read, J., Perry, B. D., Moskowitz, A., & Connolly, J. (2001). The contribution of early traumatic events to schizophrenia in some patients: a traumagenic neurodevelopmental model. *Psychiatry: Interpersonal and Biological Processes*, *64*(4), 319-345. https://doi.org/10.1521/psyc.64.4.319.18602

Roth, S., & Newman, E. (1991). The process of coping with sexual trauma. *Journal of Traumatic Stress*, *4*(2), 279-297. DOI: 10.1002/jts.2490040209

Schimmenti, A., & Caretti, V. (2016). Linking the overwhelming with the unbearable: Developmental trauma, dissociation, and the disconnected self. *Psychoanalytic Psychology*, *33*(1), 106. http://dx.doi.org/10.1037/a0038019

Schmidt, N. B., Joiner, T. E., Young, J. E., & Telch, M. J. (1995). The schema questionnaire: Investigation of psychometric properties and the hierarchical

structure of a measure of maladaptive schemas. *Cognitive therapy and research*, *19*(3), 295-321. https://doi.org/10.1007/BF02230402

Steele & van der Hart (2009). Treating dissociation. In Courtois, C. A., & Ford, J. D. (Eds.). (2009). *Treating complex traumatic stress disorders: An evidence-based guide* (pp. 82-104). New York: Guilford Press.

Steil, R., & Ehlers, A. (2000). Dysfunctional meaning of posttraumatic intrusions in chronic PTSD. *Behaviour research and therapy*, *38*(6), 537-558. https://doi.org/10.1016/S0005-7967(99)00069-8

Steinberg, M. (1994). *Structured clinical interview for DSM-IV dissociative disorders (SCID-D), revised*. Washington, DC: American Psychiatric Press.

Stevens, L. H., Spencer, H. M., & Turkington, D. (2017). Identifying Four Subgroups of Trauma in psychosis: Vulnerability, psychopathology, and Treatment. *Frontiers in psychiatry*, *8*. https://doi.org/10.3389/fpsyt.2017.00021

Trauelsen, A. M., Bendall, S., Jansen, J. E., Nielsen, H. G. L., Pedersen, M. B., Trier, C. H., ... & Simonsen, E. (2015). Childhood adversity specificity and dose-response effect in non-affective first-episode psychosis. *Schizophrenia research*, *165*(1), 52-59. https://doi.org/10.1016/j.schres.2015.03.014

Van der Kolk, B. A. (2003). *Psychological trauma*. Washington, DC: American Psychiatric Pub.

Van der Kolk, B. A. (2017). Developmental Trauma Disorder: Toward a rational diagnosis for children with complex trauma histories. *Psychiatric annals*, *35*(5), 401-408. https://doi.org/10.3928/00485713-20050501-06

Van der Kolk, B. A., & Fisler, R. (1995). Dissociation and the fragmentary nature of traumatic memories: Overview and exploratory study. *Journal of traumatic stress*, *8*(4), 505-525. DOI: 10.1002/jts.2490080402

Waelde, L. C., Silvern, L., Carlson, E., Fairbank, J. A. & Kletter, H. (2010). Dissociation in PTSD. In Dell, P. F., & O'Neil, J. A. (Eds.). *Dissociation and the dissociative disorders: DSM-V and beyond*. New York: Routledge.

Weathers, F. W., & Keane, T. M. (2007). The Criterion A problem revisited: Controversies and challenges in defining and measuring psychological trauma. *Journal of traumatic stress*, *20*(2), 107-121. https://doi.org/10.1002/jts.20210

Wenninger, K., & Ehlers, A. (1998). Dysfunctional cognitions and adult psychological functioning in child sexual abuse survivors. *Journal of Traumatic Stress*, *11*(2), 281-300. DOI: 10.1023/A:1024451103931

World Health Organization. (2018). *The ICD-11 classification of mental and behavioural disorders: Clinical descriptions and diagnostic guidelines.* Geneva: World Health Organization.

Zubin, J., & Spring, B. (1977). Vulnerability: A new view of schizophrenia. *Journal of abnormal psychology*, *86*(2), 103. http://dx.doi.org/10.1037/0021-843X.86.2.103

CHAPTER 2 – Systematic Review

What is the role of cognitive appraisals in the relationship between trauma and psychosis? A systematic review

Prepared for submission to the British Journal of Clinical Psychology (guidelines outlined in Appendix B)

Word count: 4,414 (excluding references)

What is the role of cognitive appraisals in the relationship between trauma and psychosis? A systematic review

Desiré Furnes[1*], Catherine George[1], Joanne Hodgekins[1], Siân Coker[1]

[1] Faculty of Medicine and Health Sciences, University of East Anglia, Norwich Research Park, Norwich, NR4 7TJ

Word count exc.figures/tables: 4,414

*Requests for reprints should be addressed to Desiré Furnes, Faculty of Medicine and Health Sciences, University of East Anglia, Norwich Research Park, Norwich, NR4 7TJ (email: d.furnes@uea.ac.uk)

2.1. Abstract

Objectives

A high prevalence of trauma has been reported in those experiencing psychotic symptoms and studies have focused on confirming a dose-response relationship and exploring whether specific types of trauma relate to specific psychotic symptoms. Recent research has focused on how this relationship is influenced by trauma-related mechanisms, including cognitive appraisal processes. However, as the role cognitive appraisals in the relationship between trauma and psychosis has yet to be systematically reviewed, this was the main aim of the current review.

Methods

A systematic search was conducted between June and November 2017 using the MEDLINE, EMBASE, CINAHL and PsychINFO databases. Search words used were psychosis OR psychotic OR schizophrenia AND trauma OR post-traumatic stress disorder OR PTSD AND cognitive OR cognition OR schema OR beliefs OR attribution. Articles published between 1980 and 2017 were reviewed.

Results

Twelve studies were included in the review. Four studies used samples from the general population, one study used a traumatised sample, three studies used individuals at ultra-high risk of developing psychosis and four studies used psychosis samples. Studies with reasonable sample sizes tended to report 1) an association between trauma, cognitive appraisals and positive psychotic symptoms, and 2) that cognitive appraisals predicted or mediated psychotic-like experiences, particularly relationships between emotional trauma and paranoid thinking.

Conclusions

Findings support the literature suggesting a dose-response relationship between trauma and psychotic experiences, as well as symptom specificity. Although appraisal processes tended to have an indirect role in this relationship, additional research using more robust designs is required to explore this further.

Practitioner points

- Studies reviewed replicated the literature suggesting that there is a relationship between childhood trauma and positive psychotic symptoms
- There is a potential mediating effect of cognitive appraisals, particularly between emotional trauma and paranoid thinking
- Modest sample sizes limit conclusions about non-significant findings and generalisability
- Future studies should explore this further using more robust designs

2.2. Introduction

There seems to be a growing consensus that there is a potential causal link between childhood trauma and development of psychotic experiences (e.g. Hardy et al., 2016; Read, Fosse, Moscowitz & Perry, 2014; Read, van Os, Morrison & Ross, 2005). Specifically, an increasing number of studies have confirmed a dose-response relationship between trauma and psychotic symptoms, in which severity of trauma is associated with severity of symptoms (e.g. Bentall, Wickham, Shevlin & Varese, 2012; Mayo et al., 2017; Trauelsen et al., 2015). Further, type of trauma has also been found to be associated with type of psychotic symptoms (see Gibson, Alloy & Ellman, 2016 for a review). What is less clear is *how* childhood trauma might result in development of psychosis.

Recently, focus has been directed towards the role of trauma-induced mechanisms, such as dissociation (e.g. Varese, Barkus & Bentall, 2012) and comorbid diagnosis of post-traumatic stress disorder (PTSD; e.g. Berry, Ford, Jellicoe-Jones & Haddock, 2013). Importantly, a comorbid diagnosis of PTSD is frequent in individuals diagnosed with schizophrenia and has been found to be related to higher levels of positive symptoms (see Seow et al., 2016 for a review). It has been argued that trauma-induced cognitions, which are a core part of PTSD symptomatology, play a role in the maintenance of PTSD (Foa & Rothbaum, 1998).

It is unsurprising that childhood trauma, especially exposure to interpersonal and multiple traumas, can influence the way the individual perceives themselves, others and the world, which again can influence how individuals cope with internal and external stressors (Garety, Kuipers, Fowler, Freeman & Bebbington, 2001). Although there is a robust evidence base for targeting cognitions in Cognitive Behavioural Therapy (CBT) for psychosis (e.g. see the review by Gould, Mueser, Bolton, Mays & Goff, 2001), the

role of trauma and cognitive appraisals in psychotic experiences are less understood. As negative cognitive appraisals about self and others may also hinder recovery, they are important treatment targets in trauma-induced psychosis (Foa & Rothbaum, 1998).

The role of cognitive appraisals in adaptation to traumatic stress have been critically reviewed (Sherrer, 2011), which suggested that negative trauma-related appraisals were associated with more adverse outcomes, including PTSD symptoms. However, this review explored cognitive appraisal processes in individuals with serious mental illness and not psychosis specifically, and it was not conducted systematically. Furthermore, there have been a number of publications regarding the role of trauma in psychosis in the last six years. The aim of the present review was thus to answer the following question: What is the role of cognitive appraisals in the relationship between trauma and psychosis? The literature will be systematically reviewed and followed by a discussion about future research directions.

2.3. Methods

2.3.1. Definition of terms

Defining childhood trauma is complex and disagreement exists over whether maltreatment is based on the actions of the perpetrator, the consequences experienced by the child, or a combination of these (see Cicchetti & Toth, 2005 for a discussion). However, in this review, the definition was operationalised to include the following experiences; physical, emotional and sexual abuse, and emotional and physical neglect, including bullying, as these trauma types are often included in childhood trauma descriptions (e.g. Bernstein et al., 2003; Cicchetti & Toth, 2005). For the purpose of this review, cognitive appraisals included schematic beliefs and trauma-induced cognitions, as well as cognitive biases and attributions explored in relation to childhood

trauma or psychotic symptoms, as they have been identified as potentially relevant appraisal processes within the context of trauma and psychosis (Sherrer, 2011).

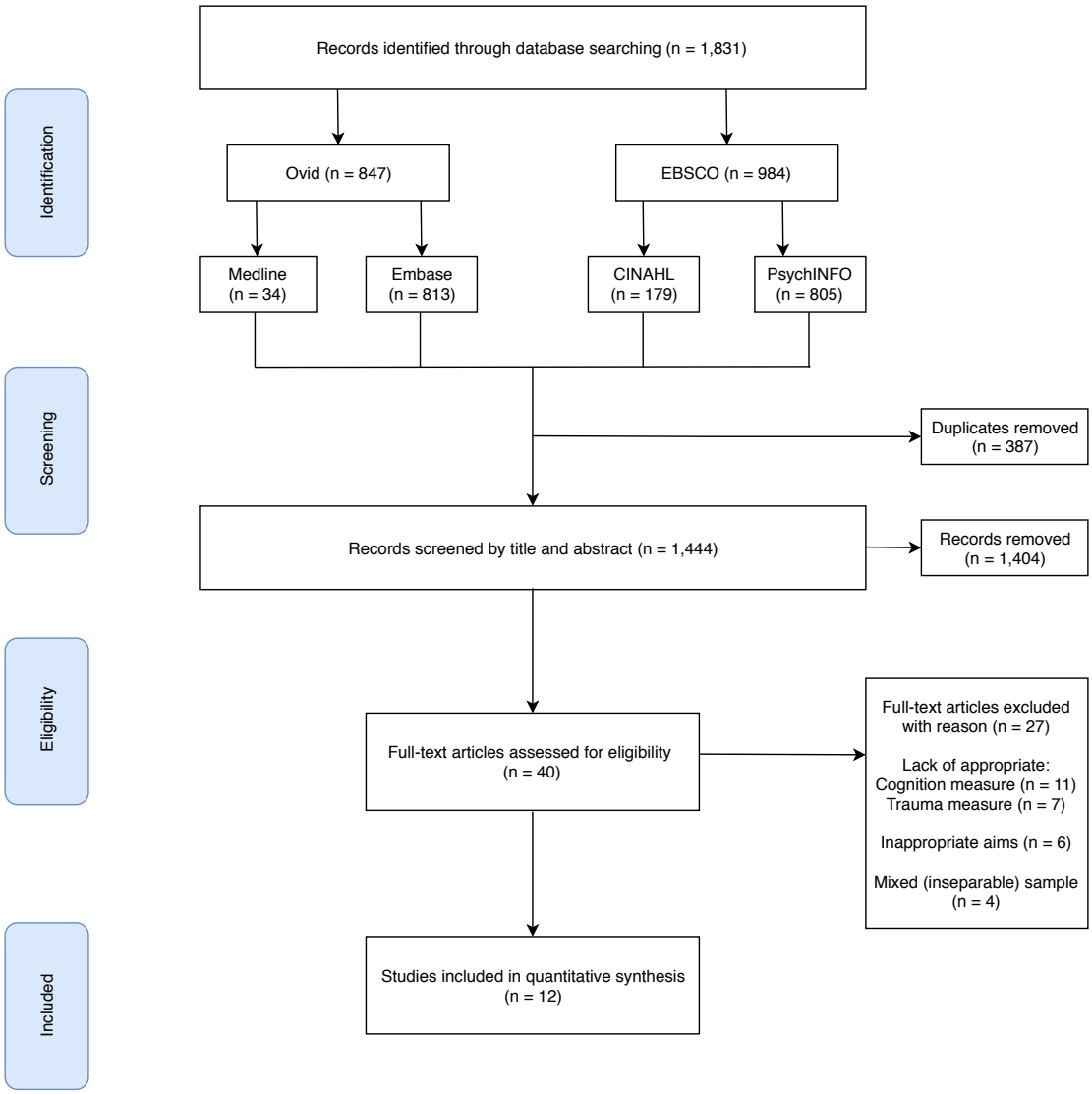
Psychotic experiences were not restricted to a formal diagnosis of Schizophrenia Spectrum Disorder (SSD), but rather including any abnormal experiences considered to lie within the psychosis spectrum. This is in line with recent theoretical arguments that psychotic experiences lie on a continuum and vary in level of severity and persistence (Rössler, Ajdacic-Gross, Rodgers, Haker & Müller, 2016). For instance, studies have reported psychotic-like experiences in the general population, in which the experiences are similar to those in the clinical population, but at subclinical levels (Gracie et al., 2007). As a dose-response is evident between trauma and psychosis, in which severity is much greater in clinical populations (Wickham & Bentall, 2016), we can also assume that childhood trauma may result in psychotic experiences that do not reach diagnostic threshold (Rössler et al., 2016). Also, psychotic experiences are far more common than psychotic disorders in the population (Kelleher et al, 2015).

2.3.2. Search strategy

The following electronic databases were employed to conduct the systematic search of peer-reviewed articles: MEDLINE (Ovid), EMBASE (Ovid), CINAHL (EBSCO) and PsychINFO (EBSCO). Studies published between 1980 and current time was included. The long time frame is justified by the fact that, to our knowledge, this topic has not been systematically reviewed before and inclusion of historical papers may be relevant to inform the development of the current knowledge base. The search terms used were: psychosis OR psychotic OR schizophrenia AND trauma OR post-traumatic stress disorder OR PTSD AND cognitive OR cognition OR schema OR beliefs OR attribution. Searches were conducted between June and November 2017.

2.3.3. Study selection

The first author identified relevant articles by screening titles and abstracts using the following inclusion criteria: a) exploration of psychotic experiences in the sample(s), b) restricted to adult population, c) measure(s) assessing childhood trauma were included, d) measure(s) of a cognitive construct (e.g. beliefs, attributions and cognitions, but excluding metacognitions) were employed, and finally e) articles written in the English language. Due to the aim of the review, only studies exploring schematic beliefs or cognitions in relation to trauma were considered appropriate. Also, both self-reported and clinician rated measures were included. Studies were excluded if the trauma was post psychosis or if the measure only assessed dissociative symptoms. Studies exploring general trauma or interpersonal trauma experienced after the age of 18 were excluded. The evidence-based Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) (Moher, Liberati, Tetzlaff, Altmann & Prisma Group, 2009) were used to report the study selection process (see Figure 1).



2.3.4. Assessing the quality of studies

To assess the quality of the studies included, the QualSyst tool (Kmet, Lee & Cook, 2004) was employed. The QualSyst tool was developed to enable critical appraisal of scientific literature. It assesses study quality using 14 items, which is scored depending on whether the criteria are met (yes = 2 points, partial = 1 point) or not (no = 0 point). If a criterion is not applicable (N/A) to the study being reviewed, it was scored N/A and excluded from the overall score (Kmet et al., 2004). The QualSyst tool was chosen due to its ability to provide a global score not influenced by criterion rated as N/A, as studies reviewed employed research designs that could not be

appropriately rated by tools better suited to intervention studies and studies using randomisation and blinding. The QualSyst checklist is found in Appendix A.

Each of the 14 items can score 2 points and maximum possible score is 28. Total score is then divided by the number of items. In this review, 3 items were N/A to all studies, which were thus only rated on 11 items. This gives a maximum score of 22, which was then divided by 11. Maximum global score per study was thus 1. All studies were rated by first and second author and inter-rater agreement was high (98.7%). Specifically, across all ratings, eight items differed in terms of receiving a score of 2 (yes) or 1 (partial). Reviewers used the QualSyst scoring manual to discuss items of disagreement and agreed on a final score.

2.4. Results

Studies tended to focus on; 1) the association between trauma and psychotic-like symptoms, and 2) *how* trauma-related mechanisms predict or mediate this association, or how groups differed on these mechanisms. The former tended to include exploration of prevalence rates of trauma and trauma types, the dose-response relationship between trauma and symptom severity, and symptom specificity, i.e. whether specific types of trauma are related to specific types of symptoms. The latter tended to include trauma-related mechanisms such as dissociation, current level of PTSD and cognitive appraisals. Due to the overall aim of the current review, the focus is mainly on the role of cognitive appraisals.

2.4.1. The role of trauma and cognitions in the general population experiencing psychotic-like symptoms

Four of the reviewed studies explored the role of trauma and cognitive appraisals in psychotic-like experiences in the general population. All studies examined how trauma and trauma-related variables are associated with hallucinations and

paranoia. Morrison and Petersen (2003) explored predisposition to verbal and auditory hallucinations and found that; 1) intensity of trauma and multiple traumas are associated with stronger predisposition to *auditory* hallucinations; 2) post-traumatic cognitions are positively associated with predisposition to auditory *and* visual hallucinations, and; 3) only those who had experienced emotional abuse reported significantly more auditory hallucinations compared to those who did not experience emotional abuse. Unfortunately, Morrison and Petersen (2003) did not include trauma or post-traumatic cognitions in their stepwise regression model.

Similarly, Gracie et al. (2007) explored the relationship between trauma and predisposition to hallucinations *and* paranoia. They reported detailed prevalence data for their sample, in which 88.6% reported trauma and 14.5% met criteria for PTSD. They found that paranoia, which was positively associated with *negative* cognitions about self and others and negatively associated with *positive* cognitions about self and others, was significantly higher in those who had experienced childhood sexual abuse and physical assault than those who had not experienced these interpersonal traumas. Finally, they found that number of traumatic events and negative beliefs about others predicted both predispositions to hallucinations and to paranoia. Negative beliefs about self also predicted predisposition to paranoia.

Freeman and Fowler (2009) also explored how trauma relates to hallucinations and paranoia but hypothesised that, whilst the link between trauma and hallucinations are more direct, the link between trauma and paranoia take a more indirect route via schematic beliefs and anxiety. They reported an overall trauma prevalence of 70% and specificity data that showed that history of trauma, non-victimisation event and childhood sexual abuse were associated with paranoid ideation and auditory hallucinations. Furthermore, victimisation was associated with paranoid ideation only

and childhood physical attack was associated with auditory hallucinations only. Further, they found that negative beliefs about self were associated with at least one traumatic event and with paranoid ideation. However, neither trauma nor negative beliefs about self was significant predictors of paranoia.

Finally, Fisher, Appaiah-Kusi and Grant (2012) explored whether anxiety and negative schemas mediate the association between trauma and paranoia. They reported prevalence data but unfortunately, they did not provide data exploring the association between cognitive appraisals and paranoia. They did however report that increased level of paranoia was only evident in those who had experienced emotional and physical abuse. When exploring the mediating role of negative self- and other schemas in the relationship between emotional and physical abuse and paranoia, they failed to reach significance in both pathways.

In summary, three studies explored associations between trauma, cognitive appraisals and psychotic symptoms (Morrison & Petersen, 2003; Gracie et al., 2007; Freeman & Fowler, 2009) whilst three studies (Morrison and Petersen, 2003; Freeman & Fowler, 2009; Fisher et al., 2012) examined whether cognitive appraisals could predict or mediate the relationship between trauma and psychosis.

2.4.2. The role of trauma and cognitions in a traumatised sample

Only one study explored the role of trauma and psychotic symptoms in a traumatised sample. All participants endorsed at least four items on the sexual events measure and 65.8% met criteria for PTSD. Kilcommons, Morrison, Knight & Lobban (2008) compared level of hallucinations and delusions in the traumatised group with a control group. They found that the traumatised group reported significantly higher levels of psychotic-like experiences compared to the control group. They also found evidence of a dose-response relationship, in which severity of sexual abuse was

significantly associated with severity of hallucinations. Further, trauma-induced cognitions were positively associated with predisposition to hallucinations and delusions. Trauma-induced cognitions did not predict visual hallucinations but approached significance. However, they did predict predisposition to delusional distress.

2.4.3. The role of trauma and cognitions in those with ultra-high risk of developing psychosis

Three of the reviewed studies explored the role between trauma and cognitions in individuals at high risk of developing psychosis. Addington et al. (2013) reported significantly more trauma and bullying in a sample of young people at clinical high risk (CHR) of developing psychosis as compared to a control group. In the CHR group, trauma and bullying was also significantly associated with measures of positive and negative symptoms, and with negative sense of self and others. However, this study measured did not explore the association between schematic beliefs and psychotic-like experiences, which restrict its usefulness in this review.

In contrast, Marshall et al.'s (2016) main aim was to explore violent thought content (VTC) in a CHR group that met criteria for attenuated psychotic symptom syndrome (APSS), but the authors were also interested in whether differences in VTC could be explained by trauma and schematic beliefs, among other variables. In short, those with violent thoughts tended to have increased attenuated psychotic symptoms and negative beliefs about self and others. In addition, those who had violent thoughts directed at self rather than directed at others also had increased attenuated psychotic symptoms and negative core beliefs about self and others, as compared to controls. The authors concluded that negative self-schema may play a role in development of violent thoughts in those with APSS.

The third and most recent study by Appaiah-Kusi et al. (2017) found significantly higher scores on childhood trauma and on negative schematic beliefs when comparing individuals at ultra-high risk (UHR) of developing psychosis to controls. In contrast, the control group scored significantly higher on positive schematic beliefs about self and others. They also reported that self-schemas partially mediated the relationship between emotional neglect and UHR, and between emotional neglect and paranoia.

2.4.4. The role of trauma and cognitions in those diagnosed with psychosis or Schizophrenia Spectrum Disorder

Four of the reviewed studies explored the role of trauma and cognitive appraisals within clinical samples. For more details on characteristics of study samples, see Table 1. Kilcommons and Morrison (2005) reported a very high prevalence rate, 94%, of trauma in their sample, an average of 3.6 different types of trauma per participant and a high frequency, 53.1%, of comorbid PTSD. They also reported findings supporting a dose-response relationship between trauma and positive symptoms. Trauma-induced cognitions were positively associated with hallucinations. Dissociation, but not trauma-induced cognitions, predicted hallucinations after controlling for trauma.

Connor and Birchwood (2012) conducted several correlational analyses and, of highest relevance here, found that dysfunctional upbringing and childhood abuse, particularly emotional trauma, was positively associated with both internal and external shame-cognitions. In contrast, emotional warmth from parents was associated with less external shame-cognitions and ability to self-assure.

The study by Wickham and Bentall (2016) used a case-control design to examine symptom specificity and the association between trauma, belief in justice and

paranoia and hallucinatory experiences. Irrespective of group membership, trauma was significantly associated with bullying and psychotic experiences and paranoia in particular. However, the associations tended to be stronger in the clinical group. Further, in the clinical group only, sexual and emotional abuse was associated with hallucinations, whilst emotional abuse and neglect was also associated with paranoia in this group.

They reported a dose-response relationship between trauma and psychosis and symptom specificity, in which childhood sexual abuse predicted hallucinations whilst childhood emotional neglect predicted paranoia. Secondly, they explored the role of personal and general beliefs about a just world (BJW). They found an opposite pattern for personal and general BJW: whilst paranoid individuals had excessive belief about the world being just for people in general, their scores on personal BJW suggested that they believed that the world was unjust to themselves. Only personal BJW mediated the association between emotional neglect and paranoia. When exploring the relationship between neglect and hallucinations, personal and general BJW did not mediate the relationship. The authors concluded that the results support the previous literature suggesting that paranoid and hallucinatory symptoms may reflect different kinds of early experiences, and that cognitive mechanisms may play a role in development of different symptoms.

The final study included in the review is the study by Hardy et al. (2016). The study aimed to replicate previous findings in the literature and to strengthen the causal link between trauma and psychosis by exploring theory-based hypotheses about the underlying trauma-related mechanisms. Specifically, they examined impaired affect regulation, intrusive trauma memories, beliefs and depression in a clinical sample suffering from relapsing psychosis. They reported an overall trauma prevalence of 86%

and found that 21.5% met criteria for PTSD within their sample. Individuals that had experienced childhood sexual and emotional abuse experienced significantly more negative beliefs about others than those that had not experienced sexual and emotional abuse, respectively.

The mediating effects of the trauma-related mechanisms were also investigated. In line with Wickham and Bentall (2016), they found an association between childhood sexual abuse and auditory hallucinations. Importantly, this relationship was mediated by post-traumatic avoidance and numbing and by post-traumatic hyperarousal. Inconsistent with their hypothesis, they failed to find a link between childhood physical abuse and psychosis. However, they did find a mediating role of negative beliefs about others, but not negative self-beliefs, in the relationship between childhood emotional abuse and persecutory delusions. They suggested that paranoid thinking may be maintained by psychological rather than physical threat.

Table 1. Summary of all 12 studies reviewed

Author	Relevant study aims	Sample description	Study design	Definition of psychosis	Psychosis measure	Trauma measure	Cognition measure	Relevant findings	Global Quality
1. Morrison & Petersen, 2003	Examine the effect of trauma and trauma-related variables on predisposition to auditory and visual hallucinations	N=64 General population (students and warehouse operatives)	Cross-sectional Correlational	N/A	RHS, IVI	Trauma measure designed by the authors	PTCI	Intensity of traumatic experience and trauma-induced cognitions is associated with predisposition to hallucinations.	0.68
2. Gracie et al., 2007	Examine the relationship between trauma and trauma-related variables and predisposition to hallucinations and paranoia	N=228 General population (students)	Cross-sectional Correlational	N/A	PS, LSHS, SIAPA	TLEQ + two additional items from CTQ	BCSS	Negative beliefs about self and others were most strongly associated with a predisposition to paranoia, but also to hallucination	0.86
3. Freeman & Fowler, 2009	Examine trauma and hallucinations and paranoia in the general population	N=200 General population (representative sampling of local population)	Cross-sectional Correlational	N/A	G-PTS, CAPS	BCSS	LSC	Trauma is common in the general population and is associated with verbal hallucinations and paranoia. Self-schemas did not mediate these associations.	0.59
4. Fisher, Appaiah-Kusi & Grant, 2012	Examine affective and psychological routes from trauma to paranoia	N=212 General population (convenience sampling through university adverts)	Cross-sectional Correlational	N/A	N/A	CTQ	BCSS	Anxiety and schemas mediate the relationship between childhood trauma and adult paranoia	0.59

5. Kilcommons, Morrison, Knight & Lobban, 2008	Examine psychotic experiences in a traumatised population	N=80 40 sexual assault survivors (from relevant services and 40 controls (convenience)	Cross-sectional Case-control	N/A	PDI-21, RHS, PSYRATS, AHRS, AHI	SEQ-2 (also measuring sexual events before the age of 14)	PTCI	Negative cognitions about the self and the world were associated with predisposition to hallucinations and deluasional ideation	0.77
6. Addington et al., 2013	Explore the association between 1) trauma/ bullying and CHR, and 2) trauma/bullying and schematic beliefs in CHR	N=540 260 CHR and 180 controls (all recruited as part of North American Prodrome Longitudinal Study 2)	Cross-sectional Case-control	Criteria of Prodromal Syndromes using SIPS	SIPS, SOPS	CTAS	BCSS	CHR report more trauma and bullying. Trauma and bullying is associated with psychotic symptoms. Trauma and bullying is associated with negative schemas	0.64
7. Marshall et al., 2016	Examine violent content in attenuated psychotic symptoms of those at CHR and the role of trauma and cognitions	N=442 CHR participants (recruited as part of North American Prodrome Longitudinal Study 2)	Cross-sectional Correlational	Attenuated Psychotic Symptom Syndrome, Criteria for Prodromal States using SIPS	SIPS, SOPS	Abuse/ Trauma Questionnaire	BCSS	Violent thoughts are related to bullying, negative schematic beliefs, anxiety and increased attenuated psychotic symptoms	0.77
8. Appaiah-Kusi et al., 2017	Examine association between trauma and later psychosis and to assess mediation role of core schemas	N=68 30 UHR (recruited at specialist service) and 38 controls (convenience)	Cross-sectional Case-control	Personal Assessment and Crisis Evaluation UHR criteria	PSQ	CTQ	BCSS	Self-schema partially mediates the relationship between childhood neglect and paranoia	0.95

9. Kilcommons & Morrison, 2005	Examine whether cognitive factors and responses to trauma could be implicated in the development of PTSD and positive psychotic symptoms	N=32 Psychosis sample (convenience sampling at community service users)	Cross-sectional Correlational	DSM-IV diagnosis of SSD	PANSS	THQ	PTCI	High rates of trauma and undiagnosed PTSD found. Negative cognitions about self and the world were associated with hallucinations. Dissociation only predicted halluincations	0.73
10. Connor & Birchwood, 2012	Examine association between trauma, voice appraisals and shame cognitions	N=74 Psychosis sample (convenience sampling at community service users)	Cross-sectional Correlational	Diagnosis of Schizophrenia or related disorder with auditory hallucinations for at least three months	VPD	CTQ-SF, s-EMBU	OAS, SASRS	Emotional abuse was associated with greater voice power and voice criticism. Parental rejection and emotional abuse predicted internal and external shame cognitions.	0.68
11. Wickham & Bentall, 2016	Examine association between trauma, belief in justice, and psychotic experiences	N=144 Psychosis sample 72 SSD (variety of services) and 72 controls (convenience sampling)	Cross-sectional Case-control	Diagnosis of SSD (or self-reported diagnosis based on information from clinician)	PANSS	CTQ-SF, RBQ	GBJWS, PBJWS	Personal and general beliefs in a just world partially mediate the relationship between emotional neglect and paranoia, but in opposite directions. No mediation effects between neglect and hallucinations	0.86

12. Hardy et al., 2016	Testing hypothesised mechanisms specifically related to impaired affect regulation, intrusive trauma memory, beliefs and depression	N=228 Psychosis sample (recruited from Psychological Prevention of Relapse in Psychosis Trial) Relapse of positive psychotic symptoms	Cross-sectional Correlational	Diagnosis of schizophrenia, schizo-affective disorder or delusional disorder	PANSS	THQ	BCSS	Link between emotional abuse and persecutory delusions was mediated by negative-other beliefs, but not by negative-self beliefs. Mediation effect was found for sexual abuse and auditory hallucinations through post-traumatic hyper- and hypoactivation	0.86

CHR = Clinical High Risk of Psychosis , UHR = Ultra-High Risk of Psychosis; SSD = Schizophrenia Spectrum Disorders; DSM-IV = Diagnostic and Statistical Manual of Mental Disorders, Version 4 (Bell, 1994); SIPS = Structured Interview for Prodromal Symptoms (Miller et al., 2002); SOPS = Scale for Assessment of Prodromal Symptoms (Miller et al., 2002); PTCI = Post-Traumatic Cognitions Inventory (Foa, Ehlers, Clark, Tolin & Orsillo, 1999); BCSS = The Brief Core Schema Scale (Fowler et al., 2006); TLEQ= The Traumatic Life Events Questionnaire (Kubany et al., 2000); CTQ = Childhood Trauma Questionnaire (Bernstein et al., 1994); CTQ-SF = Childhood Trauma Questionnaire - Short Form (Bernstein et al., 2003); LSC = Life Stressor Checklist (Wolfe & Kimerling, 1997); CTAS = Childhood Trauma and Abuse Scale (Janssen et al., 2004); THQ = Trauma History Questionnaire (Green, 1996); RHS= Revised Hallucination Scale (Launay & Slade, 1981; Morrison, Wells & Nothard, 2002); IVI = Interpretation of Voices Inventory (Morrison et al., 2002); PS = The Paranoia Scale (Fenigstein & Vanable, 1992); LSHS = The Launay Slade Hallucination Scale (Launay & Slade, 1981); SIAPA= The Structured Interview for Assessing Perceptual Anomalies (Bunney et al., 1999); G-PTS = Green et al. Paranoid Thoughts Scale -Part B (Green et al., 2008); CAPS = Cardiff Anomalous Perceptions Scale (Bell, Halligan & Ellis, 2006); PDI-21 = Peters et al. Delusion Inventory (Peters, Joseph & Garety, 1999); PSYRATS = The Psychotic Symptom Rating Scales (Haddock, McCarron, Tarrier & Faragher, 1999); AHRS = Auditory Hallucinations Rating Scale (Hoffman et al., 2003); AHI = Auditory Hallucinations Interview (Bowe, Morrison & Morley, 2008, cited in Kilcommons et al., 2008); SEQ-2 = Sexual Events Questionnaire-2 (Calam & Slade, 1989); PSQ = Psychosis Screening Questionnaire (Bebbington & Nayani, 1995); PANSS = Positive and Negative Syndrome Scale (Kay, Fiszbein & Opfer, 1987); SASRS = Self-Attacking and Self-Reassuring Sacle (Gilbert, Clarke, Hempel, Miles & Irons, 2004); OAS = Other as Shamer Scale (Cook, 1993; Goss, Gilbert & Allan, 1994); VPD = Voice Power Differential Scale (Birchwood, Meaden, Trower, Gilbert & Plainstow, 2000); s-EMBU = Egna Minnen Betraffance Uppfostrab ("My memories of upbringing") (Perris, Jabobsson, Linndstrom, Knorring & Perris, 1980); RBQ = Retrospective Bullying Questionnaire (Schäfer et al., 2004); GBJWS = The General Beliefs in a Just World Scale (Dalbert, Montada & Schmitt, 1987); PBJWS = The General Beliefs in a Just World Scale (Dalbert, 1999).

Table 2. Quality Assessment of all 12 studies reviewed

Study Author	Objective	Study Design	Recruitment Method	Sample Character-istics	Measures	Sample size	Analysis Plan	Estimate of Variance	Confounding Variables	Sufficient Results	Validity of Conclusions	Global score
1. Morrison & Petersen, 2003	2	2	1	1	1	1	2	1	0	2	2	0.68
2. Gracie et al., 2007	2	2	1	1	2	1	1	1	1	2	2	0.86
3. Freeman & Fowler, 2009	2	2	2	2	2	1	1	2	1	2	2	0.59
4. Fisher, Appaiah-Kusi & Grant, 2012	1	2	1	1	1	1	1	2	1	1	1	0.59
5. Kilcommons, Morrison, Knight & Lobban, 2008	2	2	1	1	2	1	1	1	2	2	2	0.77
6. Addington et al., 2013	1	2	2	1	2	1	1	1	1	1	1	0.64
7. Marshall et al., 2016	2	2	2	2	2	1	1	1	2	1	1	0.77
8. Appaiah-Kusi et al., 2017	2	2	2	2	2	1	2	2	2	2	2	0.95
9. Kilcommons & Morrison, 2005	2	2	1	2	2	1	1	0	1	2	2	0.73
10. Connor & Birchwood, 2012	2	2	1	2	2	1	1	0	1	2	1	0.68
11. Wickham & Bentall, 2016	2	2	1	2	2	1	1	2	2	2	2	0.86
12. Hardy et al., 2016	2	2	2	2	2	1	1	2	1	2	2	0.86

2.5. Discussion

2.5.1. The role of cognitive appraisals in the relationship between trauma and psychotic experiences

Whilst findings from the reviewed studies were in line with the previous literature suggesting that there is a dose-response relationship between trauma and psychosis (e.g. Kilcommons et al., 2008) and that symptom specificity is evident (e.g. Freeman & Fowler, 2009; Hardy et al., 2016), the overall aim of the present review was to explore how cognitive appraisal process influence this relationship. Of the four studies reviewing psychotic-like symptoms in general population samples, only three studies included cognitive appraisals in further analyses and findings were mixed. Freeman and Fowler (2009) and Fisher et al. (2012), both examining schematic beliefs, did not suggest a predictive role of negative schemas in the relationship between trauma and paranoia. In contrast, Gracie et al. (2007) found that both number of traumatic events and negative schematic beliefs predicted predisposition to both hallucinations and paranoia.

There are a number of reasons for why such inconsistencies may be found across these studies. First, the samples range from 64 to 228 participants and all studies failed to report power calculations. It is likely that the largest samples are big enough to detect associations, whilst the smallest samples may fail to detect a predictive role of cognitive appraisals. The study by Gracie et al. (2007), which employs the largest sample, is the only study that detects significant effects. It is also likely that lower prevalence of trauma within even large samples limit the likelihood of detecting associations between trauma, cognitive appraisals and symptoms. Again, of the three studies, Gracie et al. report the highest prevalence of trauma within the sample compared to Freeman and Fowler (2009). Morrison and Petersen (2003) and Fisher et

al. (2012) do not report overall prevalence rates, which complicate comparisons with these studies. The differences observed between studies are also reflected in the quality assessment scores, which suggest that studies with higher quality ratings are likely to produce more trustworthy results. In line with points raised above, Gracie et al. (2007) obtain a relatively high global rating, especially compared to Freeman and Fowler (2009) and Fisher et al. (2012).

In terms of the three studies exploring cognitive appraisals in individuals at high risk of developing psychosis, the overall aims and design of two of the studies (Addington et al., 2013; Marshall et al., 2016) limits the ability to assess the role of schematic beliefs. However, one study (Appaiah-Kusi et al., 2017) suggested a mediating role of schema between emotional neglect and UHR and between emotional neglect and paranoia. It should be noted that both this study and the study by Gracie et al (2007), which both obtained high quality ratings, suggest a role for schematic beliefs in development of paranoia.

Three of four studies using samples of individual with psychosis explored the predictive value of cognitive appraisals. Kilcommons and Morrison (2005) found that dissociation, but not trauma-induced cognitions predicted hallucinations and Wickham and Bentall (2016) and Hardy et al. (2016) both reported a direct relationship between childhood sexual abuse and hallucinations. Kilcommons et al. (2008) did not find a predictive role of trauma-induced cognitions on visual hallucinations. This could potentially suggest that the development of hallucinations follows more directly from trauma, although it is premature to conclude this based on the small sample sizes used and without conducting further longitudinal studies.

Interestingly, cognitive appraisals may play a role in development of paranoia. Wickham and Bentall (2016) reported that the association between childhood emotional

neglect and paranoia was mediated by beliefs about a just world, whilst Hardy et al. (2016) found that negative beliefs about others mediated the relationship between childhood emotional *abuse* and persecutory delusions. Again, both studies argue for a significant role of cognitive appraisals in the development of paranoid thinking and have relatively high quality ratings (i.e. Hardy et al., 2016; Wickham & Bentall, 2016), which fosters confidence in the findings reported.

2.5.4. Strengths, Limitations and Future Directions

In line with previous research, there is consensus across studies that trauma may be associated with development of psychotic symptoms. Importantly, in studies with larger sample sizes and higher quality ratings (Appaiah-Kusi et al., 2017; Gracie et al., 2007; Hardy et al. 2016; Wickham and Bentall, 2016), there also seem to be agreement that cognitive appraisals mediate the relationship between emotional trauma and development of paranoid thinking. One of the strengths that should be noted is that this is found in samples drawn from three different populations. However, notwithstanding this, four studies is a relatively low number to draw conclusions from.

The limitations of the reviewed studies should be considered when interpreting the findings. Firstly, the cross-sectional nature of the studies restricts the ability to draw conclusions regarding temporal relationships. Longitudinal designs are required to explore the theoretical assumption that emotional trauma in childhood *causes* negative cognitive appraisals, which then *causes* paranoid thinking. However, although the correlational designs employed cannot suggest causation, it is important to remember that causality does imply correlation (Miles & Shevlin, 2001).

Further, as discussed above, the reasonably small sample sizes employed in some of the studies suggest that they were most likely underpowered to explore how cognitive appraisals predict the relationship between trauma and psychotic symptoms.

Sufficient power and discussion around other possible reasons for not finding predicted results should be evident in each study. Thorough consideration of alternative explanations is not always evident in studies (e.g. Fisher et al., 2012), which influenced the quality assessment scores given. Future studies should justify their sample sizes so that conclusions drawn can be used to guide future research in a more informative and robust manner.

Recruitment method was also problematic in most studies, especially in the samples drawn from the general population. Convenience sampling of students, for instance, does not represent the population in general and, at worst, not even the student population. Further, gender and ethnicity imbalances were not uncommon across all studies (e.g. Kilcommons & Morrison, 2005; Kilcommons et al., 2008; Marshall et al., 2016). Thus, the sampling methods used restrict generalisability of the findings.

Another issue in some studies was insufficient reporting of important information. For instance, some studies did not report trauma prevalence data (e.g. Marshall et al., 2016), which then limits conclusions drawn from further statistical analyses. Other statistical issues identified included poor strategies in managing missing data. More specifically, Gracie et al. (2007) replaced missing values using mean scores, which distorts estimated variance (Shafer & Graham, 2002). Furthermore, Morrison and Petersen (2003) designed their own trauma measure and did not provide information regarding validity and reliability. Methodological issues can have an important impact on findings and should be discussed thoroughly when interpreting results.

One methodological limitation of current review was the failure to include the term “appraisals” in the search terms, which may have led to exclusion of relevant articles. It should however be noted that titles including the word appraisals were

included, as cognition was a search word and appraisals often appear in the context of "cognitive appraisals". Nevertheless, this is an important omission and one that should be rectified in future reviews. Finally, the use of retrospective measures raises potential validity and reliability issues. However, evidence suggests that although there might be some bias in retrospective reports, there is more likely a tendency towards a false negative rather than a false positive bias, which is not considered sufficiently great to invalidate studies of retrospective nature (see Hardt & Rutter, 2004 for a review).

Considering the limitations noted however, overall findings suggest preliminary evidence that cognitive appraisals play a role, particularly in the relationship between emotional trauma and paranoid thinking. This is consistent with the hypothesised pathway between trauma and psychotic experiences (Hardy, 2017). As emphasised in some of the articles (e.g. Connor & Birchwood, 2012; Fisher et al., 2012), greater understanding of the pathway from childhood trauma towards psychotic experiences, as well as the role of cognitive appraisals within this relationship, will enable development and improvements of interventions that target the dysfunctional mechanisms resulting from trauma that can maintain the psychological difficulties. In line with this, Wickham and Bentall (2016) and Hardy et al. (2016), argued for the importance of treating victimisation in psychosis.

Consistent with conclusions from the previous critical review (Sherrer, 2011), the present review also recommends that taking a comprehensive trauma history should be incorporated into all assessments of those presenting with psychosis to ensure that formulations and interventions account for this potentially important aspect of the presentation.

2.6. Conclusion

In studies with reasonable sample sizes there tended to be consensus that 1) there is a positive association between trauma and positive psychotic symptoms, as evidenced by symptom specificity and a dose-response relationship; 2) there is a positive association between trauma and cognitive appraisals and between cognitive appraisals and positive symptoms; and 3) cognitive appraisals predict or mediate paranoid thinking, specifically in relation to childhood emotional trauma. However, the latter finding is preliminary and needs to be further explored using more robust designs, employing more valid sampling methods and using adequate sample sizes.

2.7. References

Addington, J., Stowkowy, J., Cadenhead, K. S., Cornblatt, B. A., McGlashan, T. H., Perkins, D. O., ... & Cannon, T. D. (2013). Early traumatic experiences in those at clinical high risk for psychosis. *Early intervention in psychiatry*, *7*(3), 300-305. DOI: 10.1111/eip.12020

Appiah-Kusi, E., Fisher, H. L., Petros, N., Wilson, R., Mondelli, V., Garety, P. A., ... & Bhattacharyya, S. (2017). Do cognitive schema mediate the association between childhood trauma and being at ultra-high risk for psychosis? *Journal of psychiatric research*, *88*, 89-96. https://doi.org/10.1016/j.jpsychires.2017.01.003

Bebbington, P., & Nayani, T. (1995). The psychosis screening questionnaire. *Int J Methods Psychiatr Res*, *5*(1), 11-19.

Bell, C. C. (1994). DSM-IV: Diagnostic and statistical manual of mental disorders. *JAMA*, *272*(10), 828-829. DOI:10.1001/jama.1994.03520100096046

Bell, V., Halligan, P. W., & Ellis, H. D. (2005). The Cardiff Anomalous Perceptions Scale (CAPS): a new validated measure of anomalous perceptual experience. *Schizophrenia bulletin*, *32*(2), 366-377. https://doi.org/10.1093/schbul/sbj014

Bentall, R. P., Wickham, S., Shevlin, M., & Varese, F. (2012). Do specific early-life adversities lead to specific symptoms of psychosis? A study from the 2007 the Adult Psychiatric Morbidity Survey. *Schizophrenia bulletin*, *38*(4), 734-740. https://doi.org/10.1093/schbul/sbs049

Bernstein, D. P., Fink, L., Handelsman, L., Foote, J., Lovejoy, M., Wenzel, K., ... & Ruggiero, J. (1994). Initial reliability and validity of a new retrospective measure of child abuse and neglect. *The American journal of psychiatry*, *151*(8), 1132.

Bernstein, D. P., Stein, J. A., Newcomb, M. D., Walker, E., Pogge, D., Ahluvalia, T., ... & Zule, W. (2003). Development and validation of a brief screening version of the Childhood Trauma Questionnaire. *Child abuse & neglect*, *27*(2), 169-190. https://doi.org/10.1016/S0145-2134(02)00541-0

Berry, K., Ford, S., Jellicoe-Jones, L., & Haddock, G. (2013). PTSD symptoms associated with the experiences of psychosis and hospitalisation: A review of the literature. *Clinical Psychology Review*, *33*(4), 526-538. https://doi.org/10.1016/j.cpr.2013.01.011

Birchwood, M., Meaden, A., Trower, P., Gilbert, P., & Plaistow, J. (2000). The power and omnipotence of voices: subordination and entrapment by voices and significant others. *Psychological medicine*, *30*(2), 337-344.

Bowe, S. B., Morrison, A. P. & Morley S. (2008). Relationship between childhood trauma and auditory hallucinations in individuals with psychosis. Br J Clin Psychol (Submitted). Cited in Kilcommons, A. M., Morrison, A. P., Knight, A., & Lobban, F. (2008). Psychotic experiences in people who have been sexually assaulted. *Social psychiatry and psychiatric epidemiology*, *43*(8), 602-611. https://doi.org/10.1007/s00127-007-0303-z

Calam, R. M., & Slade, P. D. (1989). Sexual experience and eating problems in female undergraduates. *International Journal of Eating Disorders*, *8*(4), 391-397. DOI: 10.1002/1098-108X(198907)8:4<391::AID-EAT2260080402>3.0.CO;2-P

Cicchetti, D., & Toth, S. L. (2005). Child maltreatment. *Annu. Rev. Clin. Psychol.*, *1*, 409-438. https://doi.org/10.1146/annurev.clinpsy.1.102803.144029

Connor, C., & Birchwood, M. (2012). Abuse and dysfunctional affiliations in childhood: An exploration of their impact on voice-hearers' appraisals of power

and expressed emotion. *Psychosis*, *4*(1), 19-31. https://doi.org/10.1080/17522439.2011.630745

Cook, D. R. (1993). The internalized shame scale manual. Menomonie, WI: Channel Press.

Dalbert, C. (1999). The world is more just for me than generally: About the personal belief in a just world scale's validity. *Social Justice Research*, *12*(2), 79-98. https://doi.org/10.1023/A:1022091609047

Dalbert, C., Montada, L., & Schmitt, M. (1987). Glaube an eine gerechte Welt als Motiv: Validierungskorrelate zweier Skalen. *Psychologische Beitrage*.

Fenigstein, A., & Vanable, P. A. (1992). Paranoia and self-consciousness. *Journal of personality and social psychology*, *62*(1), 129. http://dx.doi.org/10.1037/0022-3514.62.1.129

Fisher, H. L., Appiah-Kusi, E., & Grant, C. (2012). Anxiety and negative self-schemas mediate the association between childhood maltreatment and paranoia. *Psychiatry research*, *196*(2), 323-324. https://doi.org/10.1016/j.psychres.2011.12.004

Foa, E. B., Ehlers, A., Clark, D. M., Tolin, D. F., & Orsillo, S. M. (1999). The posttraumatic cognitions inventory (PTCI): Development and validation. *Psychological assessment*, *11*(3), 303. DOI:10.1037/1040-3590.11.3.303

Foa, E. B., & Rothbaum, B. O. (1998). *Treating the trauma of rape: Cognitive-behavioral therapy for PTSD*. New York: Guilford Press.

Fowler, D., Freeman, D., Smith, B. E. N., Kuipers, E., Bebbington, P., Bashforth, H., ... & Garety, P. (2006). The Brief Core Schema Scales (BCSS): psychometric properties and associations with paranoia and grandiosity in non-clinical and

psychosis samples. *Psychological medicine*, *36*(6), 749-759. https://doi.org/10.1017/S0033291706007355

Freeman, D., & Fowler, D. (2009). Routes to psychotic symptoms: trauma, anxiety and psychosis-like experiences. *Psychiatry research*, *169*(2), 107-112. https://doi.org/10.1016/j.psychres.2008.07.009

Garety, P. A., Kuipers, E., Fowler, D., Freeman, D., & Bebbington, P. E. (2001). A cognitive model of the positive symptoms of psychosis. *Psychological medicine*, *31*(2), 189-195. https://doi.org/10.1017/S0033291701003312

Gibson, L. E., Alloy, L. B., & Ellman, L. M. (2016). Trauma and the psychosis spectrum: a review of symptom specificity and explanatory mechanisms. *Clinical psychology review*, *49*, 92-105. https://doi.org/10.1016/j.cpr.2016.08.003

Gilbert, P., Clarke, M., Hempel, S., Miles, J. N., & Irons, C. (2004). Criticizing and reassuring oneself: An exploration of forms, styles and reasons in female students. *British Journal of Clinical Psychology*, *43*(1), 31-50. DOI: 10.1348/014466504772812959

Goss, K., Gilbert, P., & Allan, S. (1994). An exploration of shame measures—I: The other as Shamer scale. *Personality and Individual differences*, *17*(5), 713-717. https://doi.org/10.1016/0191-8869(94)90149-X

Gould, R. A., Mueser, K. T., Bolton, E., Mays, V., & Goff, D. (2001). Cognitive therapy for psychosis in schizophrenia: an effect size analysis. *Schizophrenia research*, *48*(2), 335-342. https://doi.org/10.1016/S0920-9964(00)00145-6

Gracie, A., Freeman, D., Green, S., Garety, P. A., Kuipers, E., Hardy, A., ... & Fowler, D. (2007). The association between traumatic experience, paranoia and hallucinations: a test of the predictions of psychological models. *Acta*

Psychiatrica Scandinavica, *116*(4), 280-289. DOI: 10.1111/j.1600-0447.2007.01011.x

Green, B. L. (1996). Trauma history questionnaire. *Measurement of stress, trauma, and adaptation*, *1*, 366-369.

Green, C. E. L., Freeman, D., Kuipers, E., Bebbington, P., Fowler, D., Dunn, G., & Garety, P. A. (2008). Measuring ideas of persecution and social reference: the Green et al. Paranoid Thought Scales (GPTS). *Psychological medicine*, *38*(1), 101-111. https://doi.org/10.1017/S0033291707001638

Haddock, G., McCarron, J., Tarrier, N., & Faragher, E. B. (1999). Scales to measure dimensions of hallucinations and delusions: the psychotic symptom rating scales (PSYRATS). *Psychological medicine*, *29*(4), 879-889.

Hardt, J., & Rutter, M. (2004). Validity of adult retrospective reports of adverse childhood experiences: review of the evidence. *Journal of child psychology and psychiatry*, *45*(2), 260-273. DOI: 10.1111/j.1469-7610.2004.00218.x

Hardy, A. (2017). Pathways from trauma to psychotic experiences: A theoretically informed model of posttraumatic stress in psychosis. *Frontiers in Psychology*, *8*. https://doi.org/10.3389/fpsyg.2017.00697

Hardy, A., Emsley, R., Freeman, D., Bebbington, P., Garety, P. A., Kuipers, E. E., ... & Fowler, D. (2016). Psychological mechanisms mediating effects between trauma and psychotic symptoms: the role of affect regulation, intrusive trauma memory, beliefs, and depression. *Schizophrenia bulletin*, *42*(suppl_1), S34-S43. https://doi.org/10.1093/schbul/sbv175

Janssen, I., Krabbendam, L., Bak, M., Hanssen, M., Vollebergh, W., Graaf, R. D., & Os, J. V. (2004). Childhood abuse as a risk factor for psychotic

experiences. *Acta Psychiatrica Scandinavica*, *109*(1), 38-45. DOI: 10.1046/j.0001-690X.2003.00217.x

Kay, S. R., Fiszbein, A., & Opfer, L. A. (1987). The positive and negative syndrome scale (PANSS) for schizophrenia. *Schizophrenia bulletin*, *13*(2), 261. http://dx.doi.org/10.1093/schbul/13.2.261

Kelleher, I., Wigman, J. T., Harley, M., O'Hanlon, E., Coughlan, H., Rawdon, C., ... & Cannon, M. (2015). Psychotic experiences in the population: association with functioning and mental distress. *Schizophrenia research*, *165*(1), 9-14. https://doi.org/10.1016/j.schres.2015.03.020

Kilcommons, A. M., & Morrison, A. P. (2005). Relationships between trauma and psychosis: an exploration of cognitive and dissociative factors. *Acta Psychiatrica Scandinavica*, *112*(5), 351-359. DOI: 10.1111/j.1600-0447.2005.00623.x

Kilcommons, A. M., Morrison, A. P., Knight, A., & Lobban, F. (2008). Psychotic experiences in people who have been sexually assaulted. *Social psychiatry and psychiatric epidemiology*, *43*(8), 602-611. https://doi.org/10.1007/s00127-007-0303-z

Kmet, L. M., Lee, R. C., & Cook, L. S. (2004). *Standard quality assessment criteria for evaluating primary research papers from a variety of fields* (Vol. 22). Edmonton: Alberta Heritage Foundation for Medical Research.

Kubany, E. S., Leisen, M. B., Kaplan, A. S., Watson, S. B., Haynes, S. N., Owens, J. A., & Burns, K. (2000). Development and preliminary validation of a brief broad-spectrum measure of trauma exposure: the Traumatic Life Events Questionnaire. *Psychological assessment*, *12*(2), 210. DOI:10.1037/1040-3590.12.2.210

Marshall, C., Deighton, S., Cadenhead, K. S., Cannon, T. D., Cornblatt, B. A., McGlashan, T. H., ... & Woods, S. W. (2016). The violent content in attenuated psychotic symptoms. *Psychiatry research*, *242*, 61-66. https://doi.org/10.1016/j.psychres.2016.05.005

Mayo, D., Corey, S., Kelly, L. H., Yohannes, S., Youngquist, A. L., Stuart, B. K., ... & Loewy, R. L. (2017). The role of trauma and stressful life events among individuals at clinical high risk for psychosis: a review. *Frontiers in psychiatry*, *8*. https://doi.org/10.3389/fpsyt.2017.00055

Miles, J., & Shevlin, M. (2001). *Applying regression and correlation: A guide for students and researchers*. London, England: Sage Publications.

Miller, T. J., McGlashan, T. H., Rosen, J. L., Somjee, L., Markovich, P. J., Stein, K., & Woods, S. W. (2002). Prospective diagnosis of the initial prodrome for schizophrenia based on the Structured Interview for Prodromal Syndromes: preliminary evidence of interrater reliability and predictive validity. *American Journal of Psychiatry*, *159*(5), 863-865. https://doi.org/10.1176/appi.ajp.159.5.863

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & Prisma Group. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS medicine*, *6*(7), e1000097. https://doi.org/10.1371/journal.pmed.1000097

Morrison, A. P., & Petersen, T. (2003). Trauma, metacognition and predisposition to hallucinations in non-patients. *Behavioural and Cognitive Psychotherapy*, *31*(3), 235-246. https://doi.org/10.1017/S1352465803003011

Perris, C., Jacobsson, L., Linndström, H., Knorring, L. V., & Perris, H. (1980). Development of a new inventory for assessing memories of parental rearing

behaviour. *Acta Psychiatrica Scandinavica*, *61*(4), 265-274. DOI: 10.1111/j.1600-0447.1980.tb00581.x

Peters, E. R., Joseph, S. A., & Garety, P. A. (1999). Measurement of delusional ideation in the normal population: introducing the PDI (Peters et al. Delusions Inventory). *Schizophrenia bulletin*, *25*(3), 553. https://doi.org/10.1093/oxfordjournals.schbul.a033401

Read, J., Fosse, R., Moskowitz, A., & Perry, B. (2014). The traumagenic neurodevelopmental model of psychosis revisited. *Neuropsychiatry*, *4*(1), 65. DOI: 10.2217/npy.13.89

Read, J., Os, J. V., Morrison, A. P., & Ross, C. A. (2005). Childhood trauma, psychosis and schizophrenia: a literature review with theoretical and clinical implications. *Acta Psychiatrica Scandinavica*, *112*(5), 330-350. https://doi.org/10.1521/psyc.64.4.319.18602

Rössler, W., Ajdacic-Gross, V., Rodgers, S., Haker, H., & Müller, M. (2016). Childhood trauma as a risk factor for the onset of subclinical psychotic experiences: exploring the mediating effect of stress sensitivity in a cross-sectional epidemiological community study. *Schizophrenia research*, *172*(1), 46-53. https://doi.org/10.1016/j.schres.2016.02.006

Seow, L. S. E., Ong, C., Mahesh, M. V., Sagayadevan, V., Shafie, S., Chong, S. A., & Subramaniam, M. (2016). A systematic review on comorbid post-traumatic stress disorder in schizophrenia. *Schizophrenia research*, *176*(2), 441-451. https://doi.org/10.1016/j.schres.2016.05.004

Schafer, J. L., & Graham, J. W. (2002). Missing data: our view of the state of the art. *Psychological methods*, *7*(2), 147. DOI:10.1037/1082-989X.7.2.147

Schäfer, M., Korn, S., Smith, P. K., Hunter, S. C., Mora-Merchán, J. A., Singer, M. M., & Meulen, K. (2004). Lonely in the crowd: Recollections of bullying. *British Journal of Developmental Psychology*, *22*(3), 379-394. DOI: 10.1348/0261510041552756

Sherrer, M. V. (2011). The role of cognitive appraisal in adaptation to traumatic stress in adults with serious mental illness: A critical review. *Trauma, Violence, & Abuse*, *12*(3), 151-167. https://doi.org/10.1177/1524838011404254

Trauelsen, A. M., Bendall, S., Jansen, J. E., Nielsen, H. G. L., Pedersen, M. B., Trier, C. H., ... & Simonsen, E. (2015). Childhood adversity specificity and dose-response effect in non-affective first-episode psychosis. *Schizophrenia research*, *165*(1), 52-59. https://doi.org/10.1016/j.schres.2015.03.014

Varese, F., Barkus, E., & Bentall, R. P. (2012). Dissociation mediates the relationship between childhood trauma and hallucination-proneness. *Psychological medicine*, *42*(5), 1025-1036. https://doi.org/10.1017/S0033291711001826

Wickham, S., & Bentall, R. (2016). Are Specific Early-Life Adversities Associated With Specific Symptoms of Psychosis?: A Patient Study Considering Just World Beliefs as a Mediator. *The Journal of nervous and mental disease*, *204*(8), 606. DOI: 10.1097/NMD.0000000000000511

Wolfe, J., & Kimerling, R. (1997). Gender issues in the assessment of posttraumatic stress disorder. In Wilson, J. P. & Keane, T. M. (Eds). Assessing psychological trauma and PTSD (pp. 192-238). New York, US: Guildford Press.

CHAPTER 3 – Bridging the Systematic Review and Empirical Paper

Summarising main findings of the systematic review and introducing the empirical paper

Word count: 448 (excluding references)

3.1. Bridging systematic review and empirical paper

The overall aim of the systematic review was to explore how cognitive appraisals influence the relationship between trauma and psychotic experiences. Cognitive appraisals were targeted due to 1) the growing interest in exploring the mechanisms involved in the trauma pathway to psychosis; 2) a gap in the literature, in which the role of trauma and cognitive appraisals in psychotic-like experiences has not been systematically reviewed; 3) further improve the focus in Cognitive Behavioural Therapy (CBT) for psychosis to include not only cognitive biases but also trauma-induced cognitive biases; 4) provide a valuable context for the following empirical paper.

It was not surprising that the studies reviewed argued for a dose-response relationship between trauma and psychotic symptoms, and for symptom specificity. Interestingly, the overall findings indicate that, in response to emotional trauma, cognitive appraisals play a role in development of paranoid thinking. In line with discussions in the general introduction, it was also evident that these findings were consistent across clinical and non-clinical populations with similar experiences. This is consistent with the assumption that difficult early experiences are closely linked to difficulties experienced later in life.

However, cognitive appraisals are only one of many hypothesised mechanisms that may partially explain *why* and *how* trauma can lead to the development of mental health difficulties. Similarly, psychosis only represents one of the symptomatological consequences that can follow childhood trauma. The aim of the final study reviewed (Hardy et al., 2016) was to strengthen the causal link between trauma and psychosis by exploring theory-based hypotheses about the underlying trauma-related mechanisms. In a similar manner, the following empirical paper aims to explore how underlying trauma-

related mechanisms, including trauma-induced cognitions, dissociative mechanisms and current self-reported level of post-traumatic stress disorder (PTSD), contribute to mental health difficulties. However, rather than exploring this within one clinical population, the following study aims at exploring this in two clinical populations, which are known to overlap in their high level of trauma history.

This approach allows us to investigate whether different ways of coping with childhood trauma could potentially result in different symptomatology. Assuming that psychotic and borderline symptoms are a consequence of a traumatic early life, the different symptomatology may actually reflect previous experiences and coping strategies. In addition to the three trauma-related mechanisms discussed in the paper, the additional methodology chapter will outline other trauma-related mechanisms that were also investigated in the same samples, but which will be reported in another Thesis Portfolio (as data collection for this project was conducted in tandem with another trainee clinical psychologist). Further, using the same dataset, an additional result chapter will also follow that explores symptom specificity findings reported in the systematic review.

3.2. References

Hardy, A., Emsley, R., Freeman, D., Bebbington, P., Garety, P. A., Kuipers, E. E., ... & Fowler, D. (2016). Psychological mechanisms mediating effects between trauma and psychotic symptoms: the role of affect regulation, intrusive trauma memory, beliefs, and depression. *Schizophrenia bulletin*, *42*(suppl_1), S34-S43. https://doi.org/10.1093/schbul/sbv175

CHAPTER 4 – Empirical Paper

Consequences of childhood maltreatment: can trauma and trauma-related mechanisms explain psychotic and borderline symptomatology?

Prepared for submission to the British Journal of Clinical Psychology

Word count: 4,986 (excluding references)

Consequences of childhood maltreatment: can trauma and trauma-related mechanisms explain psychotic and borderline symptomatology?

Desiré Furnes[1*], Catherine George[1], Johanne Hodgekins[1], Liam Gillian[2], Siân Coker[1]

[1] Faculty of Medicine and Health Sciences, University of East Anglia, Norwich Research Park, Norwich, NR4 7TJ

[2] Norfolk and Suffolk NHS Foundation Trust, Bury South Integrated Delivery Team, G-Block, Hospital Road, Bury St. Edmunds, IP33 3NR

Word count exc.figures/tables: 4,986

*Requests for reprints should be addressed to Desiré Furnes, Faculty of Medicine and Health Sciences, University of East Anglia, Norwich Research Park, Norwich, NR4 7TJ (email: d.furnes@uea.ac.uk)

4.1. Introduction

Severe and persistent maltreatment in childhood has detrimental effects on a child's psychobiological development (Ford & Courtois, 2009; Mueser et al., 1998) and has been linked to various difficulties and psychopathologies later in life (see Weich, Patterson, Shaw & Stewart-Brown, 2009 for a review of prospective studies). Over the last two decades, both individuals presenting with psychotic (e.g. Barnow et al., 2010; Gracie et al., 2007; Spauwen et al., 2006) and borderline (e.g. Carvalho et al., 2014; Nicol, Romaniuk, Pope & Hall, 2015) symptoms have been found to report high levels of childhood trauma, and theoretical accounts have argued that childhood trauma plays an important role in development of these mental health disorders (Linehan, 1993; Read, Perry, Moscowitz & Connolly, 2001; Read, Fosse, Moscowitz & Perry, 2014).

A meta-analysis by Varese et al. (2012) found that, when compared to a control group, patients experiencing psychosis were 2.72 times more likely to have been exposed to childhood trauma. A more recent meta-analysis found a trauma prevalence of 86.8% in individuals at ultra-high risk (UHR) of developing psychosis (Kraan, Velthorst, Smit, de Haan & van der Gaag, 2015). Zanarini et al. (1997) explored trauma prevalence in a large sample (N=467) of individuals diagnosed with borderline personality disorder (BPD) and found that 91% reported abuse histories while 92% had experienced childhood neglect. Similarly, a study by Temes et al. (2017) compared trauma prevalence in adolescents and adults diagnosed with BPD and found an overall trauma prevalence of 85.5% and 97.3%, respectively. Some studies have also emphasised the high comorbid prevalence of post-traumatic stress disorder (PTSD) in those with BPD, ranging between 31.6% (Grant et al., 2009) and 56% (Zanarini et al., 1998), and in patients diagnosed with schizophrenia, ranging between 0 and 57% (see Seow et al., 2016 for a review).

The underlying mechanisms explaining *why* childhood trauma can result in later psychopathology is not yet established (Read, van Os, Morrison & Ross, 2005). However, the role of similar trauma-related mechanisms, such as dissociation and cognitive appraisals, has been explored in both individuals diagnosed with psychosis (e.g. Read et al., 2005; Varese, Barkus & Bentall, 2012) and BPD (e.g. Ross, 2007; Winter, Bohus & Lis, 2017). Dissociation, which can be understood as an adaptive coping mechanism during a traumatic event, can later become maladaptive and contribute to development of symptomatology, such as PTSD (van der Kolk & Fisler, 1995).

High levels of dissociation have consistently been found both in samples with psychosis (e.g. Moskowitz, Read, Farrely, Rudegeair & William, 2010) and BPD (e.g. Zanarini & Jager-Hyman, 2010). A rare study (Pec, Bob & Raboch, 2014) comparing dissociative symptoms in individuals diagnosed with schizophrenia and BPD found that; 1) traumatic stress was positively associated with dissociative symptoms in both groups, 2) individuals diagnosed with BPD scored significantly higheron symptoms of traumatic stress and had a higher mean score, although not significantly higher, on the Dissociative Experience Scale (DES; Bernstein & Putnam, 1986). These findings may implicate dissociative mechanisms as a potential coping strategy employed transdiagnostically. Unfortunately, the study aims and design did not allow further exploration of whether and how the groups differ in dissociative mechanisms, e.g. potential group differences on DES subscales.

Cognitive appraisals have also been suggested as a possible underlying mechanism in the relationship between trauma and psychotic and borderline symptoms. Specifically, whilst cognitive appraisals have been found to mediate the relationship between emotional trauma and paranoid thinking in samples with psychosis (Hardy et

al., 2016; Wickham & Bentall, 2016), the role of trauma and negative schematic beliefs has also been emphasised in BPD symptomatology (e.g. see Roepke, Vater, Preißler, Heekeren & Dziobek, 2013, for a review on social cognition processing in BPD). However, as far as we know, there has been no study exploring whether, and potentially how, individuals with psychotic and borderline symptoms differ in cognitive appraisal processes, and whether a potential difference predicts different symptomatology.

Interestingly, although individuals diagnosed with psychosis and BPD overlap in trauma histories, expression of different trauma-related mechanisms and prevalence of PTSD comorbidity, these groups are often studied in isolation. Although some studies have begun to explore the comorbid presentation of psychosis and BPD (see Barnow et al., 2010 for a review), it is still unclear whether differential expression of critical mechanisms, such as dissociation, trauma-induced cognition and PTSD, can explain *why* individuals with childhood trauma develop different symptomatology.

From a diagnostic perspective, BPD and psychotic disorders represent two distinct diagnostic categories. Thus, this approach would predict that individuals diagnosed with BPD should display higher levels of borderline symptoms, whilst individuals diagnosed with psychosis should display higher levels of psychotic symptoms. More complex presentations however, in which individuals display both borderline and psychotic symptoms, can be understood in terms of comorbidity, or the presence of both diagnostic categories.

When considering comorbidity from a transdiagnostic perspective, assumptions would be somewhat different. If borderline and psychotic symptoms are reflecting early maltreatment, it is possible that different symptomatology reflect differences in trauma histories, as well as differences in coping mechanisms employed during and after traumatic events. This perspective would argue that the presence of both borderline

symptoms and psychotic symptoms would merely reflect a complex and severe childhood trauma history. Importantly, this viewpoint would predict a dose-response relationship, in which trauma severity predicts symptom severity, as well as symptom specificity, in which specific symptoms are predicted by specific trauma types (Ford & Curtois, 2009; Steil & Ehlers, 2000). Although these two approaches argue for somewhat different predictions they are not mutually exclusive, but offer information from different contexts that should be integrated into a more holistic understanding of symptomatology.

The aim of the following paper is thus to explore these assumptions further using both a diagnostic and a transdiagnostic approach; 1) from a diagnostic perspective, it will be explored *whether* individuals diagnosed with BPD and psychosis differ in A) trauma types and severity, B) expression of critical trauma-related mechanisms and C) symptom expression. The two clinical groups will also be compared to a control group, which function as a comparison group. It was assumed that the diagnostic perspective would hypothesise that different symptom profiles would be evident for the two groups, whilst the transdiagnostical perspective would hypothesise that individuals with more severe trauma histories would display more severe levels of trauma related mechanisms and higher symptom expression, irrespective of diagnosis; 2) from a transdiagnostical perspective, it will be explored A) whether trauma are associated with trauma-related mechanisms and borderline and psychotic symptoms, irrespective of diagnostic group (i.e. collapsing all three samples into one sample), and B) *how* trauma-related mechanisms explain borderline and psychotic symptoms, again irrespective of diagnostic group.

4.2. Method

The study was reviewed and approved by an NHS Ethical Committee.

4.2.1. Design

A case-control design was employed. For the between-groups analyses, power calculations were conducted (power was 0.08 and alpha was 0.05). Effect size was set to 0.7 based on the assumption that a large effect size would reflect more clinically meaningful differences between the groups. A total sample of 105 participants was required (G*Power 3.1; Faul, Erdfelder, Land & Bucher, 2007). As the second research question employed a transdiagnostic approach, the three groups were collapsed into one group to explore predictors of symptomatology. The sample size of 105 was thus considered sufficient (Garson, 2016).

4.2.2. Participants and Procedure

Participants in the clinical groups were recruited from Inpatient and Community Mental Health Services in East England. Inclusion criteria were a primary diagnosis of *either* psychosis or BPD, as confirmed by their clinical team. Comorbidity was not an exclusion criterion unless participants with a primary diagnosis of BPD and psychosis also had a diagnosis of psychosis and BPD, respectively. Also, if participants reported active suicidal or violence plans or if clinicians considered participation to be detrimental to the participant's wellbeing, they were not considered eligible.

Using convenience sampling, participants in the control group were recruited through an anonymous online survey advertised on social media sites and in email invitations. Firstly, participants completed an online eligibility checklist and were excluded if they confirmed that they were currently receiving or had ever received mental health treatment. Also, due to the sensitivity of questions asked, participants reporting any suicidal thoughts or plans were excluded from the survey and redirected to Aftercare information. In addition, across all three groups, eligible participants were between the age of 18 and 65 (as restricted by questionnaire norms), fluent in written

and spoken English, and have the ability to understand and give written informed consent.

In total, 286 participants entered the study; 29 diagnosed with psychosis and 28 diagnosed with BPD completed the questionnaire booklet with a member of the research team present, and 224 individuals, i.e. participants in the control group, entered the online survey. In the online survey, 62 participants were not considered eligible (38 people had received a diagnosis of a mental health disorder, 15 had received mental health care, six people reported suicidal thoughts, two reported not being fluent in spoken and written English and one person did not consent) and were redirected to Aftercare information. Further, 162 participants either cancelled or did not complete the survey. Thus, 63 participants from the control sample completed the survey, resulting in a total of 120 participants across the three groups.

The order of the questionnaires was randomised in all three groups. Once completed, clinical participants were debriefed and, when necessary, the clinical team was involved in follow-up conversations. Online participants were directed to Aftercare Information. Participants were not paid for their time but were offered the opportunity to enter a prize draw of four £20 Amazon vouchers. Mean (SD; standard deviation) age for total and each participant group is reported in Table 1. The age range for the total group was 19 to 64 and mean (SD) age and further demographic information is reported in Table 1. The inclusion period for the study was July 2017 until January 2018.

Table 1. Demographic information for total group (N=120) and for each participant group separately

	Total	BPD	Psychosis	Controls	Test statistics
Sample size - N (%)	120 (100%)	28 (23.3%)	29 (24.2%)	63 (52.5%)	
Gender - frequency (%)					$\chi2 = 8.09$*
Female	79 (65.8%)	22 (78.6%)	13 (44.8%)	44 (69.8%)	
Male	41 (34.2%)	6 (21.4%)	16 (55.2%)	19 (30.2%	
Age - mean (SD)	34.37 (12.04)	35.82 (13.78)	36.86 (12.83)	32.43 (10.53)	F = 1.594
Ethnicity - frequency (percentage)					$\chi2 = 5.61$
White British	91 (75.8%)	26 (92.9%)	20 (69.0%)	45 (71.4%)	
Asian British	4 (3.3%)		3 (10.3%)	1 (1.6%)	
Black British	3 (2.5%)		3 (10.3%)		
White Other	17 (14.2%)	2 (7.1%)	3 (10.3%)	12 (19.0%)	
Asian Other	5 (4.2%)			5 (4.2%)	
Highest Education					$\chi2 = 49.242$***
Primary School	1 (0.8%)	1 (3.4%)	1 (3.4%)		
Secondary School	19 (15.8%)	13 (46.4%)	4 (13.8%)	2 (3.2%)	
College	31 (25.8%)	10 (35.7%)	14 (48.3%)	7 (11.1%)	
Undergraduate	28 (23.3%)	5 (17.9%)	6 (20.7%)	17 (27.0%)	
Masters	23 (19.2%)		2 (6.9%)	21 (33.3%)	
PhD/Doctoral	14 (11.7%)			14 (22.2%)	
Other/unknown	4 (3.3%)		2 (6.9%)	2 (3.2%)	
Employment					$\chi2 = 4.356$
Employed	48 (40.0%)	3 (10.7%)	7 (24.1%)	38 (60.3%)	
Unemployed	41 (34.2%)	22 (78.6%)	17 (58.6%)	2 (3.2%)	
Student	25 (20.8%)	1 (3.6%)	3 (10.3%)	21 (33.3%)	
Retired	3 (2.5%)	1 (3.6%)	1 (3.4%)	1 (1.6%)	
Other/unknown	3 (2.5%)	1 (3.6%)	1 (3.4%)	1 (1.6%)	
Marital Status					$\chi2 = 3.079$
Married	30 (25.0%)	8 (28.6%)	5 (17.2%)	17 (27.0%)	
Separated	3 (2.5%)	1 (3.6%)	2 (6.9%)		
Divorced	4 (3.3%)	2 (7.1%)		2 (3.2%)	
Widowed	1 (0.8%)		1 (3.4%)		
Single	58 (48.3%)	15 (53.6%)	18 (62.1%)	25 (39.7%)	
Living with partner	21 (17.5%)	2 (7.1%)	2 (6.9%)	17 (27.0%)	
Other/unknown	3 (2.5%)		1 (3.4%)	2 (3.2%)	

Note. $\chi2$ indicates Pearson's chi-squared test; F indicates One-way ANOVA; * indicates p-value below 0.05; ** indicates p-value below 0.01, *** indicates p-value below 0.001

Two demographic variables, gender and education level, were significantly different between the participant groups. *Post hoc* comparisons revealed that both the BPD and control groups differed in their gender distribution, with significantly more females, compared to the psychosis sample, which had a balanced gender distribution. Further, control group were more highly educated than both clinical groups, while participants diagnosed with psychosis were more highly educated than individuals diagnosed with BPD.

4.2.3. Measures

4.2.3.1. Early Trauma Inventory Self Report – Short Form (ETISR-SF; Bremner, Bolus & Mayer, 2007).

The ETISR-SF is an abbreviated version of The Early Trauma Inventory – Self Report (ETI-SR) (Bremner et al., 2007), as the ETI-SR was found to have a redundant number of items needed to accurately assess trauma. The administration time reduced from 30 minutes to 5 minutes (Bremner et al., 2007; Plaza et al., 2011). The ETISR-SF consists of 27 items; 11 items assess general trauma, 5 assess physical abuse, 5 assess emotional abuse, and 6 items assess sexual abuse. Response options are binary (YES/NO) and trauma severity is indicated by number of events (i.e. number of YES responses).

The ETISR-SF has satisfactory internal consistency (α=0.70-0.87) and validity (r=0.37-0.47) (Bremner et al., 2007). The scale is suitable for both clinical and non-clinical populations due to its ability to assess a wide range of trauma (Thabrew, de Sylva & Romans, 2012). The satisfactory validity and reliability of the ETISR-SF has also been established in other languages, such as Korean (Jeon et al., 2012), Brazilian Portugese (Osório et al, 2013) and Spanish (Plaza et al., 2011).

4.2.3.2. Abbreviated PTSD Checklist-Civilian Version (PCL-C; Weathers, Litz, Huska & Keane, 1994).

The PCL-C (Weathers et al., 1994) is a self-report screening measure of PTSD symptomology and severity, which has been found to have good internal consistency, test-retest reliability, and convergent and discriminant validity (Blanchard, Jones-Alexander, Buckley & Forneris, 1996; Ruggiero, Del Ben, Scotti & Rabalais, 2003). Lang and Stein (2005) developed two abbreviated versions, a two-item version and a six-item version. The six-item version was found to achieve better specificity and was

thus selected (Lang et al., 2012). Estimated time to complete the six-item version is 2 minutes (Lang et al., 2012). There are two items per cluster of PTSD symptoms (i.e. re-experiencing, avoidance and hyperarousal) selected based on highest correlation with the individual cluster score on PCL-C. Response to each item is given on a 5-point scale (ranging from 1 = "not at all" to 5 = "extremely"). The authors have suggested a cut-off score of 14 for the six-item version (Lang & Stein, 2005).

4.2.3.3. Post-Traumatic Cognitions Inventory (PTCI; Foa et al., 1999).

The PTCI is a 33-item self-report measuring cognitions related to post-traumatic symptomatology. It consists of three underlying factors; negative cognitions about self (21 items), negative cognitions about the world (seven items) and self-blame (five items) (Foa et al., 1999). Each item is rated on a 7-point scale ranging from 1 (totally disagree) to 7 (totally agree). Estimated completion time is 5 minutes and total score is the sum of all the individual scores. The PTCI has been found to have good psychometric properties, such as internal consistency (α=0.97) and test-retest reliability (P=0.85) (Foa et al., 1999), and it has been found to discriminate well between traumatised individuals with and without PTSD (Foa et al., 1999).

4.2.3.4. The Dissociative Experience Scale-II (DES-II; Carlson & Putnam, 1993).

The DES-II is a 28-item self-report measure of dissociative experiences. It is an updated version from the first scale (Bernstein & Putnam, 1986), which has been used to explore dissociation in a range of clinical and non-clinical populations, including schizophrenia and BPD (Carlson & Putnam, 1993). Respondents rate each item on a scale from 0-100% and it takes about 10 minutes to complete (Carlson & Putnam, 1993; Putnam et al., 1996). The total score is averaged across all items and separate scores can also be calculated for three subscales; amnesic dissociation, absorption and

imaginal involvement and depersonalisation (Putnam et al., 1996). A total score above 30 indicates high dissociators (Putnam et al., 1996). DES-II has shown good construct validity, internal consistency, reliability (r=0.93) and excellent convergent validity (d=1.82) (Campbell & Morrison, 2007; Van Ijzendoorn & Schuengel, 1996).

4.2.3.5. The Brief Schizotypal Symptoms Inventory (SSI; Hodgekins et al., 2012).

The Schizotypal Personality Questionnaire (SPQ, Raine, 1991) was designed to measure self-reported schizotypal personality traits. A modified version, the SSI, was developed to measure schizotypal states, which assesses the presence and frequency of current subclinical psychotic symptoms (Hodgekins, 2009). Further, a Brief SSI version with 20-items was developed, consisting of three subscales; anomalous experiences (eight items), paranoia (six items) and social anxiety (six items) (Hodgekins, 2009; 2012). Completion time is estimated to five minutes and each item is rated on a Likert scale ranging from 0 (not at all) to 4 (all of the time). The maximum total score on the scale is 80. The Brief SSI has shown good internal consistency (α=0.87), test-retest reliability (r=0.86) and good convergent and construct validity compared to the SSI (Hodgekins, 2009; 2012). Both SPQ and the SSI has been found to be suitable in both clinical and non-clinical populations (Hodgekins, 2009).

4.2.3.6. Abbreviated Borderline Symptom List (BSL-23; Bohus et al., 2009).

The BSL-23 is a shortened version of the Borderline Symptom List (Bohus et al., 2007; Bohus et al., 2009) that measures BPD symptomatology. Each of the 23 items is rated on a 5-point Likert scale ranging from 0 (not at all) to 4 (very strong) and a total sum score or mean score can be reported. The measure also has a separate item asking the respondent to indicate their overall personal state in the last week on a 0% to 100 % scale, as well as an additional eleven items assessing engagement with

maladaptive behaviours (e.g. “I hurt myself by cutting, burning, strangling, headbanging etc”) during the last week (Bohus et al., 2009). Completion time is estimated to 3-4 minutes (Soler et al., 2013). The BSL-23 has been found to have good test-retest reliability (r=0.82) and excellent internal consistency (α=0.97) (Bohus et al., 2009).

4.2.3.7. Data Analysis.

Overall missing data was below 1.8% across all measures. For binary variables (type of trauma categories), Pearson’s chi-squared test, and Fisher’s exact test when expected frequencies were less than five, were employed to explore group differences (Laerd, 2017). All other variables were assessed for outliers using boxplots and for normality using Shapiro-Wilk’s test, histograms, boxplots and Q-Q plots. Only participants in the control group scoring in the clinical range on borderline and schizotypal symptoms (N=7) were excluded from further analysis. The total sample was thus 113 participants. As all variables violated the normality assumption ($p>.05$) when using Shapiro, a modified Levene’s test, the Brown-Forsythe Test, was conducted and revealed heterogeneity of variance for all variables ($p<.001$).

To deal with the unequal sample sizes, heterogeneity of variance and non-normality within the control group, the data was rank transformed (Zimmerman & Zumbo, 1993). However, normality tests and homogeneity of variance tests were still significant across most variables. Thus, for between-group analyses, Welch Tests were conducted using Games-Howell post hoc (Zimmerman & Zumbo, 1993). Bonferroni adjustment was applied to correct for multiple testing.

The three groups were then collapsed to explore hypotheses from a transdiagnostic rather than a diagnostic perspective. Normality and homogeneity of variance tests were still significant. Thus, a non-parametric point-biserial correlation, Kendall’s tau b, was employed to explore associations. Due to its ability to deal with

exploratory path analyses, small samples, normality, heterogeneity of variance and multicollinearity (Garson, 2016; Lowry & Gaskin, 2014), Partial Least Square Path Modeling (PLS-PM), or PLS Structural Equation Modeling (PLS-SEM), was used to further explore how trauma-related mechanisms explain borderline and schizotypal symptoms.

The SmartPLS-3 (Ringle, Wende & Becker, 2015) software was employed as it has been argued to be highly appropriate software for *predictive* complex path modeling (Garson, 2016). Assumptions for PLS-SEM was used to guide development of the models (see Garson, 2016 for a detailed outline of assumptions). Importantly, sample size was considered sufficient, as determined by the dependent variable with the highest number of predictors (N=30), although 100 participants is recommended to improve accuracy (Chin, 2010; Garson, 2016). The raw data was used as SmartPLS-3 automatically implements standardisation of the data (Garson, 2016).

4.2.3.7.1. Model Specification.

Two *formative* models (see Figures 1 and 2) were developed, in which each indicator (e.g. DES-II absorption subscale) represents one dimension of meaning of the latent variables (e.g. DES-II total scale). In both models, childhood trauma is a combined scale of emotional, sexual and physical trauma. PTSD symptoms and trauma-induced cognitions were integrated into one overall factor due to high multicollinearity. All models were bootstrapped using 5000 subsamples to compute the significance of PLS coefficients (Garson, 2016). Significance level was set to .05 (two-tailed). As missing was lower than 5% in each variable, this was considered acceptable and pairwise deletion was selected, as it retains as much information as possible (Ringle et al., 2015).

4.3. Results

4.3.1. Descriptive statistics

Table 2 lists prevalence of each trauma, mean (SD) for trauma severity, trauma-related variables and borderline and schizotypal symptoms, for total group and for each group separately. Individuals diagnosed with BPD consistently reported a higher proportion of all trauma types and higher scores on all trauma-related measures, as well as on both borderline and psychosis measures compared to individuals diagnosed with psychosis. Similarly, when compared to the control group, individuals in the psychosis group consistently reported a higher proportion of all trauma types and higher scores on all trauma-related measures, and on both borderline and psychosis measures.

Table 2. Descriptive information (N=113). Count (%) for trauma types and mean (SD) for trauma severity, trauma-related variables and symptoms

	Total	BPD	Psychosis	Controls
ETISR-SF - count (%)				
Type of trauma	113 (100%)	28 (100%)	29 (100%)	56 (100%)
General trauma				
YES	102 (90.3%)	28 (100%)	28 (96.6%)	46 (82.1%)
NO	11 (9.7%)	0 (0%)	1 (3.4%)	10 (17.9%
Physical trauma				
YES	85 (75.2%)	26 (92.9%)	25 (86.2%)	34 (60.7%)
NO	28 (24.8%)	2 (7.1%)	4 (13.8%)	22 (39.3%)
Emotional trauma				
YES	75 (67%)	28 (100%)	22 (75.9%)	25 (45.5%)
NO	37 (33.0%)	0 (0%)	7 (24.1%)	30 (54.5%)
Sexual trauma				
YES	46 (41.1%)	18 (64.3%)	14 (50%)	14 (25%)
NO	66 (58.9%)	10 (35.7%)	14 (50%)	42 (75.0%)
Total trauma score - mean (SD)	9.09 (5.95)	14.12 (4.26)	11.24 (5.46)	5.41 (4.35)
BSL - mean (SD)				
BSL	1.08 (1.09)	2.35 (0.89)	1.25 (0.91)	0.32 (0.23)
BSL overall life quality (%)	61.9% (2.22)	41.9% (1.81)	56.6% (2.39)	73.9% (1.49)
BSL behaviours	0.18 (0.26)	0.40 (0.27)	0.15 (0.22)	0.06 (0.09)
SSI - mean (SD)				
SSI social anxiety	10.35 (7.25)	17.00 (5.50)	12.59 (6.89)	5.91 (4.89)
SSI paranoia	6.46 (6.69)	11.81 (5.91)	8.17 (7.16)	2.66 (3.59)
SSI anomalous	4.98 (6.35)	8.96 (5.81)	7.72 (7.52)	1.25 (1.81)
SSI total	21.80 (16.87)	37.77 (11.37)	28.48 (16.37)	9.82 (6.97)
PTCI - mean (SD)				
PTCI negative self beliefs	62.96 (41.13)	112.31 (25.09)	74.28 (30.37)	31.86 (18.13)
PTCI negative world beliefs	27.17 (13.38)	39.96 (7.37)	32.86 (9.33)	17.71 (9.97)
PTCI self-blame	15.10 (9.36)	22.19 (8.40)	19.86 (7.00)	8.96 (6.58)
PTCI total	102.67 (58.48)	169.50 (34.09)	123.83 (39.09)	57.52 (30.75)
PCL-C - mean (SD)				
PLC-C total	14.89 (6.97)	23.35 (4.09)	16.48 (5.12)	9.73 (3.35)
DES - mean (SD)				
DES amnesia	12.59 (19.41)	27.50 (23.72)	14.20 (21.28)	3.68 (5.12)
DES depers/derealisation	16.27 (22.10)	35.00 (22.07)	23.16 (23.74)	2.68 (5.87)
DES absorption	30.14 (24.33)	51.74 (21.72)	34.54 (24.33)	16.34 (13.85)
DES overall average	21.06 (20.07)	39.12 (18.34)	25.09 (21.48)	9.29 (7.57)

Abbreviations: % = percentage; SD = standard deviation; ETISR-SF = Early Trauma Inventory Self Report - Short Form; BSL-23 = Borderline Symptom List - Short Version; Brief SSI = Brief Version of Schizotypal Symptoms Inventory; PTCI = Post-Traumatic Cognitions Inventory; PCL-C = Abbreviated PTSD Checklist - Civilian Version; DES = Dissociative Experience Scale - II; depers = depersonalisation.

4.3.2. Between-group analyses

Between-group analyses for all variables are listed in Table 3. First, there was a significant difference between the groups on all trauma types and severity, but the significant group difference remained for childhood emotional and sexual trauma only when applying Bonferroni adjustment (p=.002). Between-group analyses for all other rank-transformed variables were also significant, even after adjusting the significance level (all p's<.001). *Post hoc* comparisons revealed that all three groups differed significantly on all scales and subscales (all p's<.033), with the exception of the borderline behaviours scale (BSL subscale), anomalous experiences (SSI subscale) and self-blame (PTCI subscale) (all p's>.05). Specifically, the psychosis and control groups did not differ on BSL behaviour scale whilst BPD and psychosis groups did not differ in reported anomalous experiences and levels of self-blame.

In addition, when applying Bonferroni adjustment, the two clinical groups did not differ in trauma severity, BSL Quality-of-Life ratings, scores on SSI total scale, SSI social anxiety and paranoia subscales, PTCI negative cognitions about the world, and on the DES amnesia, depersonalisation/ derealisation and absorption subscales. Also, the psychosis and control groups did not differ on the DES amnesia scale (all p's>.002). In summary, individuals diagnosed with BPD scored consistently higher than individuals diagnosed with psychosis, which again scored consistently higher than controls across all measures.

Table 3. Descriptive information (N=113). Count (%) for trauma measure and mean (SD) for rank transformed trauma frequency and trauma-related variables

	Total	BPD	Psychosis	Controls	Test statistics	Effect size
ETISR-SF - count (%)						
Type of trauma	113 (100%)	28 (100%)	29 (100%)	56 (100%)		
General trauma					p = .015*	C = .27
YES	102 (90.3%)	28 (100%)	28 (96.6%)	46 (82.1%)		
NO	11 (9.7%)	0 (0%)	1 (3.4%)	10 (17.9%		
Physical abuse					$\chi 2$ (2) = 12.873**	C = .32
YES	85 (75.2%)	26 (92.9%)	25 (86.2%)	34 (60.7%)		
NO	28 (24.8%)	2 (7.1%)	4 (13.8%)	22 (39.3%)		
Emotional abuse					$\chi 2$ (2) = 26.354***	C = .44
YES	75 (67%)	28 (100%)	22 (75.9%)	25 (45.5%)		
NO	37 (33.0%)	0 (0%)	7 (24.1%)	30 (54.5%)		
Sexual abuse					$\chi 2$ (2) = 13.133***	C = .32
YES	46 (41.1%)	18 (64.3%)	14 (50%)	14 (25%)		
NO	66 (58.9%)	10 (35.7%)	14 (50%)	42 (75.0%)		
Total trauma score - mean (SD)	9.09 (5.95)	14.12 (4.26)	11.24 (5.46)	5.41 (4.35)	t(2,61.63) = 45.735***	ω^2 = .41
BSL-23 mean rank (SE)						
BSL-23	58.93 (3.31)	99.5 (3.17)	68.93 (5.42)	33.47 (2.65)	t(2,56.97) = 127.207***	ω^2 = .38
95% CI	52.38 - 65.49	93.00 - 106.00	57.82 - 80.04	28.15-38.79		
BSL-23 overall life quality (%)	61.40 (3.19)	31.27 (3.94)	53.22 (6.52)	79.62 (3.41)	t(2,56.45) = 42.941***	ω^2 = .34
95% CI	55.07 - 67.72	23.16 - 39.38	39.86 - 66.59	72.79 (86.44)		
BSL-23 behaviours	59.25 (3.10)	92.39 (5.15)	55.98 (5.85)	44.37 (3.16)	t(2,53.92) = 31.285***	ω^2 = .34
95% CI	53.10 - 65.40	81.83 - 102.95	43.99 - 67.97	38.04 - 50.69		
Brief SSI - mean rank (SE)						
Brief SSI social anxiety	60.38 (3.32)	92.57 (4.14)	70.76 (6.09)	38.91 (3.53)	t(2,58.76) = 49.041***	ω^2 = .40
95% CI	53.80 - 66.96	84.08 - 101.07	58.28 - 83.24	31.83 - 45.99		
Brief SSI paranoia	59.25 (3.28)	90.96 (4.37)	68.05 (6.77)	38.83 (3.18)	t(2,54.82) = 47.152***	ω^2 = .38
95% CI	52.74 - 65.75	82.00 - 99.93	54.19 - 81.91	32.46 - 45.20		

Brief SSI anomalous	59.82 (3.21)	88.16 (5.05)	76.88 (5.49)	36.82 (2.92)	$t(2,53.01) = 48.271$***	$\omega^2 = .45$
95% CI	53.46 - 66.19	77.79 - 98.53	65.64 - 88.12	30.98 - 42.66		
Brief SSI total	59.55 (3.31)	95.93 (3.17)	75.38 (5.36)	33.17 (2.82)	$t(2,58.28) = 111.144$***	$\omega^2 = .59$
95% CI	52.99 - 66.11	89.42 - 102.44	64.40 - 86.35	27.52 - 38.82		
PTCI - mean rank (SE)						
PTCI negative self beliefs	59.31 (3.33)	99.66 (3.35)	72.83 (3.99)	32.14 (2.93)	$t(2,61.60) = 116.667$***	$\omega^2 = .65$
95% CI	52.72 - 65.91	92.78 - 106.54	64.66 - 80.99	26.26 - 38.02		
PTCI negative world beliefs	59.40 (3.24)	93.23 (3.67)	73.72 (4.64)	35.06 (3.31)	$t(2,61.59) = 71.251$***	$\omega^2 = .53$
95% CI	52.98 - 65.81	85.70 - 100.77	64.22 - 83.23	28.42 - 41.70		
PTCI self-blame	59.70 (3.28)	86.70 (5.18)	78.91 (4.72)	36.79 (3.49)	$t(2,58.57) = 42.845$***	$\omega^2 = .43$
95% CI	53.46 - 66.48	76.06 - 97.33	69.25 - 88.58	29.79 - 43.80		
PTCI total	59.43 (3.34)	98.89 (3.51)	75.17 (3.70)	31.55 (2.93)	$t(2,61.84) = 114.305$***	$\omega^2 = .66$
	52.82 - 66.05	91.70 - 106.09	67.58 - 82.76	25.69 - 37.42		
PCL-C - mean rank (SE)	59.75 (3.31)	100.77 (2.74)	70.43 (4.70)	33.71 (2.96)	$t(2,61.84) = 136.627$***	$\omega^2 = .63$
95% CI	53.19 - 66.3	95.14 - 106.40	60.80 - 80.06	27.79 - 39.64		
DES-II - mean (SD)						
DES-II amnesia	60.58 (3.19)	90.09 (4.89)	64.53 (6.46)	43.79 (3.45)	$t(2,55.62) = 29.901$***	$\omega^2 = .41$
95% CI	54.25 - 66.91	80.06 - 100.11	51.31 - 77.76	36.87 - 50.70		
DES- II depers/derealisation	60.06 (3.25)	93.55 (3.79)	76.72 (5.25)	34.68 (2.83)	$t(2,56.43) = 83.273$***	$\omega^2 = .56$
95% CI	53.63 - 66.49	85.78 - 101.33	65.98 - 87.47	29.01 - 40.35		
DES-II absorption	60.84 (3.28)	93.86 (3.91)	70.09 (5.67)	39.54 (3.62)	$t(2,60.61) = 51.769$***	$\omega^2 = .42$
95% CI	54.34 - 67.34	85.83 - 101.88	58.48 - 81.69	32.29 - 46.80		
DES-II overall average	60.66 (3.26)	95.89 (3.46)	71.52 (5.24)	37.43 (3.35)	$t(2,61.01) = 73.343$***	$\omega^2 = .50$
95% CI	54.21 - 67.12	88.79 (103.00)	60.78 (82.26)	30.72 - 44.14		

Note. $\chi 2$ = Pearson's chi-squared test; p = Fishers Exact Test; t = Welch Test on rank transformed means; * indicates p-value below 0.05; ** indicates p-value below 0.01, *** indicates p-value below 0.001, C = Pearson's Contingency Coefficient, ω^2 = omega squared. All tests are two-tailed and Bonferroni adjustment $p = .002$. Abbreviations: % = percentage; SD = standard deviation; CI = confidence intervals,depers = depersonalisation; ETISR-SF = Early Trauma Inventory Self Report - Short Form; BSL-23 = Borderline Symptom List - Short Version; Brief SSI = Brief Version of Schizotypal Symptoms Inventory; PTCI = Post-Traumatic Cognitions Inventory PCL-C = Abbreviated PTSD Checklist - Civilian Version; DES = Dissociative Experience Scale - II.

4.3.3. Correlational Analyses

As can be seen in Table 4, trauma was significantly associated with all trauma-related mechanisms and with borderline and schizotypal symptoms. These associations were more pronounced for childhood trauma compared to general trauma. Even after correcting for multiple comparisons (p=.005), the majority (65.5%) of the associations remained significant.

Table 4. Non-parametric correlational analyses, Kendall's Tau-b, between type and severity of trauma, trauma-related scales and subscales and borderline and schizotypal symptoms (N=113).

		Total Trauma	General Trauma	Physical Trauma	Emotional Trauma	Sexual Trauma
ETISR-SF						
	Total trauma score		0.329**	0.470***	0.620***[c]	0.576***[c]
BSL						
	BSL mean	0.459***	0,144	0.219**	0.432***[c]	0.291***[c]
	BSL overall life quality (%)	-0.391***[b]	-0.147[b]	-0.254**[b]	-0.344**[a]	-0.213*[a]
	BSL behaviours	0.383***	0.062**	0,099	0.324***[c]	0.332***[c]
SSI						
	SSI social anxiety	0.279***	0.177*	0.248**	0.311***[c]	0.110[c]
	SSI paranoia	0.410***	0.172*	0.214**	0.387***[c]	0.210***[c]
	SSI anomalous	0.501***	0.185*	0.312**	0.381***[c]	0.294***[c]
	SSI total	0.428***	0.128**	0.297***	0.401***[c]	0.213**[c]
PTCI						
	PTCI negative self beliefs	0.401***	0,136	0,152	0.356***[c]	0.264**[c]
	PTCI negative world beliefs	0.466***	0.189*	0.208**	0.426***[c]	0.295**[c]
	PTCI self-blame	0.408***	0.204**	0.184*	0.387***[c]	0.290***[c]
	PTCI total	0.447***	0.165*	0.186*	0.403***[c]	0.302***[c]
PCL-C		0.534***	0.190*	0.275**	0.470***[c]	0.294***[c]
DES-II						
	DES-II amnesia	0.400***	0,143	0.377***	0.372***[c]	0.294***[c]
	DES- II depers/derealisation	0.514***	0.181*	0.344***	0.409***[c]	0.273**[c]
	DES-II absorption	0.453***	0,153	0.274***	0.358***[c]	0.308***[c]
	DES-II overall average	0.491***	0.175*	0.324***	0.397***[c]	0.299***[c]

Note.* indicates p-value below 0.05; ** indicates p-value below 0.01, *** indicates p-value below 0.001; [a] indicates (N = 110); [b] indicates (N = 111); [c] indicates (N = 112). All tests are two-tailed and Bonferroni adjustment p =.005 (using five trauma categories and total scale for each measure). Abbreviations: ETISR-SF = Early Trauma Inventory Self Report - Short Form; BSL-23 = Borderline Symptom List - Short Version; Brief SSI = Brief Version of Schizotypal Symptoms Inventory; PTCI = Post-Traumatic Cognitions Inventory; PCL-C = Abbreviated PTSD Checklist - Civilian Version; DES = Dissociative Experience Scale - II; depers = depersonalisation.

4.3.4. Partial Least Square Structural Equation Modeling

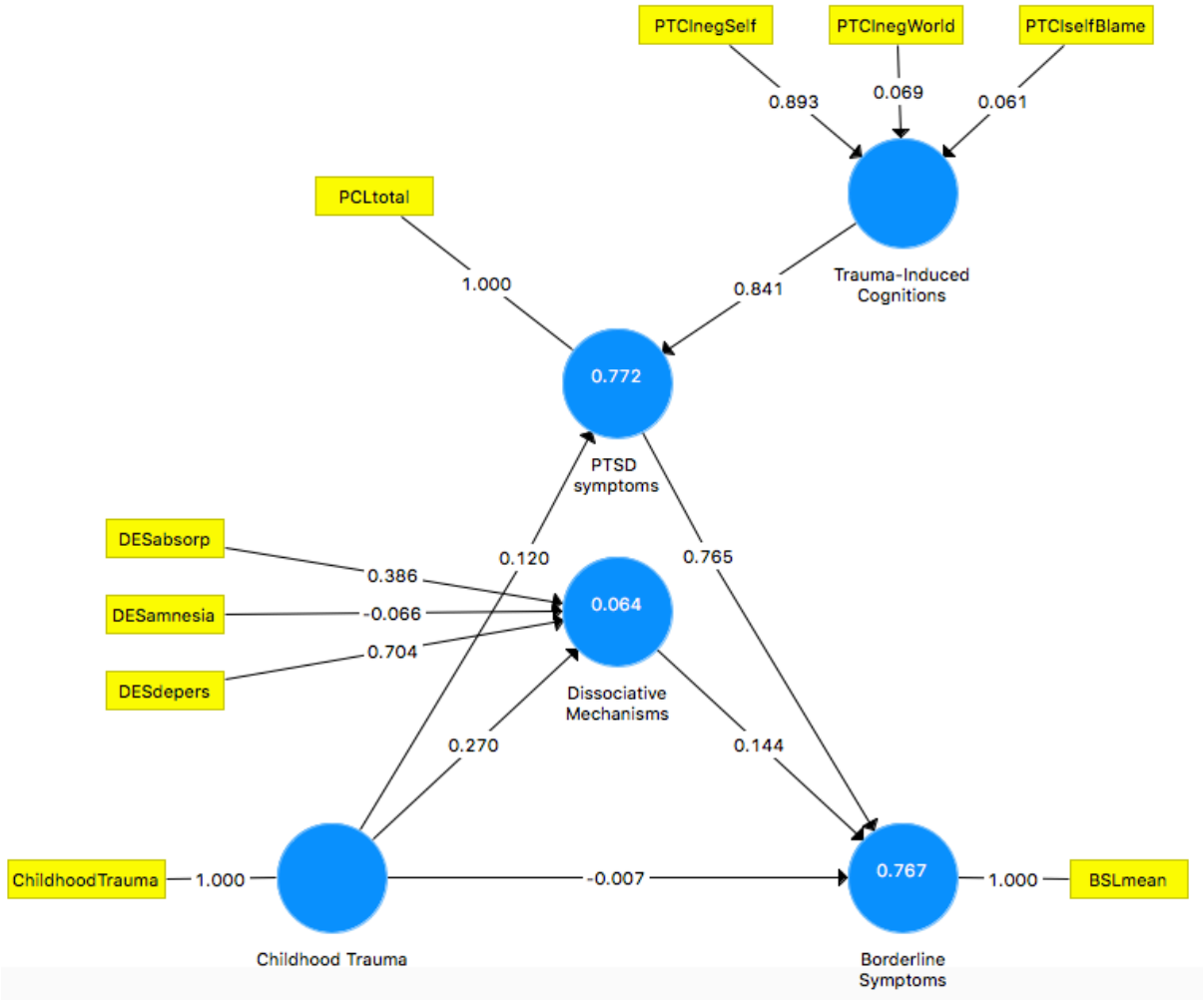
4.3.4.1. Childhood Trauma and Borderline Symptoms.

A well-fitted measurement model was found. Firstly, path loadings for all variables were found to be large and highly significant (all above .772, $p<.001$), which suggested that the latent variables were reliable. Thus, although some indicators had non-significant outer weights (DES absorption, DES amnesia, PTCI negative world cognitions and PTCI self-blame), the reliable loadings suggested that the indicators should remain within the model (Garson, 2016). Similarly, cross-loadings suggested that every indicator loaded well with their intended factor (all loadings above .772) and no indicator correlated more highly with another factor. It should however be noted that cross-loadings of indicators with other factors are somewhat higher than recommended for a well-fitted model. Further, standardised factor scores indicated an overall low proportion of outliers, arguing for a better measurement fit. There was no evidence of multicollinearity issues among the indicators, as all VIF (variance inflation factor) values were below 5 (i.e. highest VIF value was 4.669).

As the measurement model was found to be well-fitted, the quality of the structural model was assessed. Structural VIF was also considered acceptable for all factors (all coefficients below 2.723). Importantly, the structural path coefficient between childhood trauma and borderline symptoms (i.e. total indirect effect) was large and highly significant, T=2.937, $p=.003$, suggesting that exposure to childhood trauma is linked to development of borderline symptoms. However, when exploring specific indirect effects, the mediating effect of PTSD symptoms (self-reported PTSD symptoms and trauma-induced cognitions) were significant (T=2.435, $p=.015$). No such effect was found for dissociative symptoms ($p>.05$). Full mediation through PTSD symptoms was evident, as the path coefficient between childhood trauma and borderline symptoms

was not significant (p>.05). Finally, adjusted R-square indicated that a substantial proportion, 76.7%, of the variance in borderline symptoms was accounted for by the model. Outer weights and loadings for the measurement model and path coefficients for the structural model, as well as adjusted R-square (within latent variables), are displayed in Figure 1.

Figure 1. PLS-SEM model examining the relationship between childhood trauma and borderline symptoms (N=113).



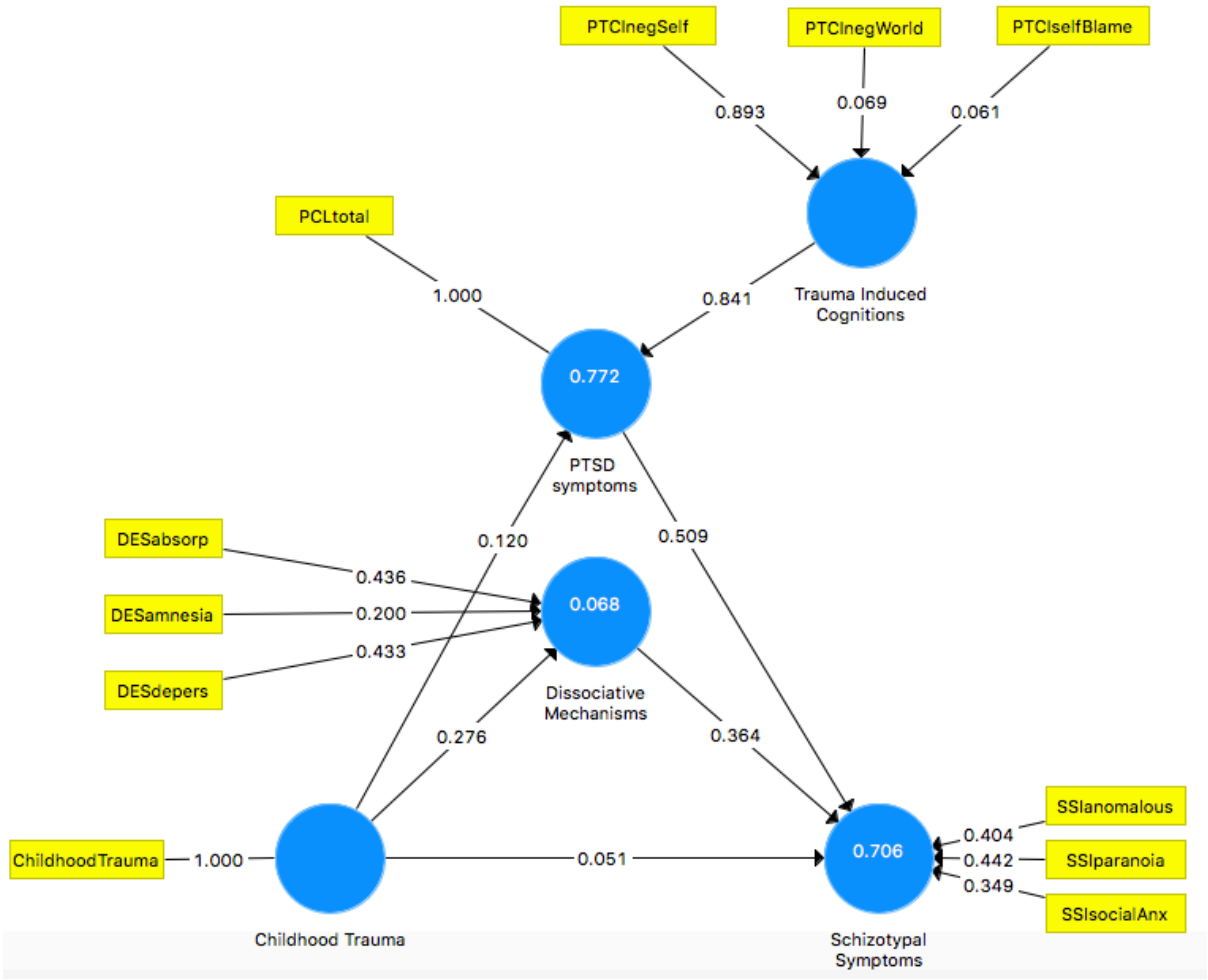
Note. Arrows from indicators to latent variables display outer weights and loadings, whilst paths between latent variables display path (i.e. regression) coefficients. Adjusted R-square is presented within constructs. DESabsorp = DES-II absorption subscale; DESdepers = DES-II depersonalisation/derealisation subscale; PTCInegSelf = PTCI negative cognitions about self subscale; PTCInegWorld = negative cognitions about the world subscale; BSLmean = mean of borderline symptoms.

4.3.4.2. Childhood Trauma and Schizotypal Symptoms.

Again, a well-fitted measurement model was found. For all variables, path loadings were large and highly significant (all above .768, $p<.001$). Thus, even though outer weights for some indicators (DES amnesia, PTCI negative world cognitions and PTCI self-blame) were not significant, their reliable loadings indicated that they should remain within the model (Garson, 2016). Cross-loadings within each factor were found to be acceptable (all above .804), and each indicator loaded better with their intended factor than other factors. However, higher-than-recommended cross-loadings with other factors were also evident. Again, the overall proportion of outliers were found to be low and all outer VIF values among indicators were below 4.669, which suggested that multicollinearity was not a problem in the measurement model.

Similarly, the structural model was also found to be well-fitted. However, the VIF was within the acceptable range for all factors (all coefficients below 2.764). Importantly, the relationship between childhood trauma and schizotypal symptoms (total indirect effect) was highly significant, T=3.910, $p<.001$. However, when exploring specific indirect effects, the relationship was mediated by dissociative mechanisms, T=2.599, $p=.009$, and by PTSD symptoms, T=2.211, $p=.027$. Again, the relationship was fully mediated, as the path coefficient between childhood trauma and schizotypal symptoms were non-significant ($p>.05$). Also, a substantial proportion of the variance in schizotypal symptoms was explained by the model, in which 70.6% of the variance was accounted for. Figure 2 displays outer weights and loadings for the measurement model, path coefficients for the structural model and adjusted R-square within latent variables.

Figure 2. PLS-SEM model examining the relationship between childhood trauma and schizotypal symptoms (N=113).



Note. Arrows from indicators to latent variables display outer weights and loadings, whilst paths between latent variables display path (i.e. regression) coefficients. Adjusted R-square is presented within constructs. DESabsorp = DES-II absorption subscale; DESdepers = DES-II depersonalisation/derealisation subscale; PTCInegSelf = PTCI negative cognitions about self subscale; PTCInegWorld = negative cognitions about the world subscale; SSIsocialAnx = SSI social anxiety subscale.

4.4. Discussion

4.4.1. Group differences in trauma, trauma-related mechanisms and symptoms

A consistent pattern in group differences was found, in which individuals diagnosed with BPD reported a significantly higher proportion of childhood sexual and emotional trauma, an overall higher score on dissociation and trauma-induced

cognitions, and also on PTSD and borderline symptoms, when compared to individuals diagnosed with psychosis. The psychosis group scored significantly higher than the control group on all scales and subscales with the exception of the dissociative amnesia subscale and on the behaviour subscale on the borderline measure.

The high trauma prevalence reported in both clinical samples are in line with previous meta-analytic findings (Kraan et al., 2015; Temes et al, 2017; Varese et al., 2012; Zanarini et al, 1997). Our finding that the BPD sample reported higher levels of subclinical psychotic symptoms compared to the psychosis sample can be understood from both diagnostic and transdiagnostic perspective. Specifically, if a transdiagnostic process, e.g. exposure to childhood trauma and trauma-related mechanisms, drives the development and expression of psychotic experiences, this could account for the finding that psychotic experiences are experienced in a range of individuals, irrespective of diagnostic category (Yung & Lin, 2016).

In contrast, from a diagnostic perspective, it is possible that individuals in the BPD group have a high prevalence of comorbid psychotic disorder that can account for the psychotic experiences reported (Barnow et al., 2010). However, within this sample, the problem with this line of reasoning is that a comorbid diagnosis of psychosis was the only diagnosis that functioned as an exclusion criterion in the BPD group. If these individuals should have been diagnosed with a psychotic disorder, this would suggest that psychotic disorders in these individuals were greatly under-diagnosed. One possibility is that, when individuals already have been diagnosed BPD, reports of psychotic experiences are understood as part of their BPD presentation, e.g. as transient, stress-related paranoid ideations and dissociative symptoms (DSM-V; APA, 2013) rather than being considered as possible signs of a comorbid psychotic illness.

Potential methodological issues should be considered when interpreting findings. Firstly, the schizotypal symptoms measure assesses subclinical psychotic symptoms and its suitability to assess psychotic experiences may vary between the groups. Whilst individuals diagnosed with BPD may experience more frequent subclinical psychotic symptoms, individuals diagnosed with psychosis may experience more severe psychotic episodes that are not well captured by the measure. Secondly, it is possible that the two samples differ in how they interpret and report trauma and symptoms, which may bias the findings reported here and elsewhere in the literature.

Finally, the inclusion criteria for the psychosis sample were "a primary diagnosis of psychosis", which may result in a heterogeneous sample. It has been argued that psychosis should be considered as a symptom arising through different pathways rather than being a unitary diagnostic disorder (Stevens, Spencer & Turkington, 2017). Specifically, whilst some individuals may have a genetic vulnerability to develop psychosis, others may display psychotic symptoms in response to trauma (Stevens et al., 2017). If subgroups exist within the psychosis spectrum, heterogeneous samples may obscure our understanding of psychotic symptoms resulting specifically from trauma. A longitudinal approach is needed to explore this further.

4.4.2. The role of trauma-related mechanisms in borderline and psychotic symptomatologies

When exploring symptoms transdiagnostically, correlational analyses suggested that childhood trauma is associated with dissociation, trauma-induced cognitions and borderline, psychotic and PTSD symptomatology. However, complex path modeling analyses was needed to explore whether trauma-related mechanisms may explain *why* some individuals develop borderline and psychotic symptoms in response to childhood trauma. In the first PLS-SEM model, borderline symptoms were fully mediated by

PTSD symptoms. This may suggest that post-traumatic symptomatology in response to childhood trauma contribute to development of BPD, although this needs to be confirmed in using longitudinal designs. Whilst PTSD symptoms were also a significant mediator of schizotypal symptoms, dissociative mechanisms were the strongest mediator in the second model. As both models could account for a substantial amount of the variance in symptoms, this may suggest that the trauma-related mechanisms assessed in the current study are important in development of both borderline and psychosis symptomatology. Again, longitudinal studies will be required to confirm this finding.

Some caution should be taken when interpreting these findings. For instance, correlations between some of the indicators and other factors were higher than 0.3, which is what is considered as acceptable (Garson, 2016), although it is in line with the minimum requirement that indicators should load best on its intended factor (Garson, 2016). However, it is not surprising that the indicators correlate across factors, considering that trauma, trauma-related mechanisms and symptomatology can be assumed to relate to each other. Thus, although findings are preliminary, these models would appear to suggest that different expression of trauma-related mechanisms may be involved in development of different symptomatologies in response to childhood trauma.

4.4.3. Study limitations and strengths and future research suggestions

A major strength in the current study was its ability to explore symptomatology from a diagnostic and transdiagnostic perspective, as well as the use of path modeling allowing for more complex transdiagnostic analyses. However, methodological issues limit the generalisability of the current findings, such as recruiting via convenience sampling. Also, although pairwise deletion of missing values increases power, this

strategy also has its limitations, such as over- or underestimated standard errors (Marsh, 1998). However, as missing was very low in this study the use of pairwise deletion was considered acceptable. Another potential limitation that should be noted is the inclusion of two items on the DES-II (Carlson & Putnam, 1993) that assess psychotic-like experiences. Considering the underlying assumption in this study that dissociative mechanisms mediate the relationship between childhood trauma and psychotic-like symptoms, the inclusion of items assessing psychosis within the hypothesised mediator becomes problematic. Future studies should consider the exclusion of these items when exploring the influence of dissociation on psychosis to ensure that the measure of dissociation is representative of dissociative experiences only.

Links have been found between sexual trauma and hallucinations, in which post-traumatic symptomatology had a potential mediating role (Hardy et al., 2016), and between emotional trauma and paranoid symptoms, in which schematic beliefs had a potential mediating role (Hardy et al., 2016; Wickham & Bentall, 2016). The findings on symptom specificity should be further explored using path modeling, as well as exploring other potential paths hypothesised to exist between specific types of trauma and specific symptoms.

In conclusion, although findings and interpretations from this study are preliminary and longitudinal studies are needed to confirm *causal* relationships, the use of different approaches to symptomatology highlights the need to explore the role of trauma in development of psychopathology from different perspectives. We would argue that diagnostic and transdiagnostic approaches are not mutually exclusive but offer invaluable insights from different perspectives that need to be integrated to achieve a more holistic understanding of different symptomatologies.

4.5. References

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5®)*. Arlington, VA: American Psychiatric Pub.

Barnow, S., Arens, E. A., Sieswerda, S., Dinu-Biringer, R., Spitzer, C., & Lang, S. (2010). Borderline personality disorder and psychosis: a review. *Current psychiatry reports*, *12*(3), 186-195. https://doi.org/10.1007/s11920-010-0107-9

Bernstein, E. M., & Putnam, F. W. (1986). Development, reliability, and validity of a dissociation scale. *The Journal of nervous and mental disease*, *174*(12), 727-735. DOI: 10.1097/00005053-198612000-00004

Blanchard, E. B., Jones-Alexander, J., Buckley, T. C., & Forneris, C. A. (1996). Psychometric properties of the PTSD Checklist (PCL). *Behaviour research and therapy*, *34*(8), 669-673. https://doi.org/10.1016/0005-7967(96)00033-2

Bohus, M., Kleindienst, N., Limberger, M. F., Stieglitz, R. D., Domsalla, M., Chapman, A. L., ... & Wolf, M. (2009). The short version of the Borderline Symptom List (BSL-23): development and initial data on psychometric properties. *Psychopathology*, *42*(1), 32-39. https://doi.org/10.1159/000173701

Bohus, M., Limberger, M. F., Frank, U., Chapman, A. L., Kühler, T., & Stieglitz, R. D. (2007). Psychometric properties of the borderline symptom list (BSL). *Psychopathology*, *40*(2), 126-132. https://doi.org/10.1159/000098493

Bremner, J. D., Bolus, R., & Mayer, E. A. (2007). Psychometric properties of the early trauma inventory–self report. *The Journal of nervous and mental disease*,*195*(3), 211. DOI: 10.1097/01.nmd.0000243824.84651.6c

Campbell, M. L., & Morrison, A. P. (2007). The relationship between bullying, psychotic-like experiences and appraisals in 14–16-year olds. *Behaviour*

research and therapy, 45(7), 1579-1591. https://doi.org/10.1016/j.brat.2006.11.009

Carlson, E. B., & Putnam, F. W. (1993). An update on the dissociative experiences scale. *Dissociation: progress in the dissociative disorders, 6*(1), 16-27.

Carvalho Fernando, S., Beblo, T., Schlosser, N., Terfehr, K., Otte, C., Löwe, B., ... & Wingenfeld, K. (2014). The impact of self-reported childhood trauma on emotion regulation in borderline personality disorder and major depression. *Journal of Trauma & Dissociation*, *15*(4), 384-401. https://doi.org/10.1080/15299732.2013.863262

Chin, W. W. (2010). How to write up and report PLS analyses. In *Handbook of partial least squares* (pp. 655-690). Berlin, Heidelberg; Springer. https://doi.org/10.1007/978-3-540-32827-8_29

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior research methods*, *39*(2), 175-191. https://doi.org/10.3758/BF03193146

Foa, E. B., Ehlers, A., Clark, D. M., Tolin, D. F., & Orsillo, S. M. (1999). The posttraumatic cognitions inventory (PTCI): Development and validation. *Psychological assessment*, *11*(3), 303. DOI:10.1037/1040-3590.11.3.303

Ford & Courtois. (2009). Defining and understanding complex trauma and complex traumatic stress disorders. In Courtois, C. A., & Ford, J. D. (Eds.). (2009). *Treating complex traumatic stress disorders: An evidence-based guide*. New York: Guilford Press.

Garson, G. D. (2016). Partial Least Squares: Regression and Structural Equation Models. Asheboro, NC: Statistical Associates Publishers.

Gracie, A., Freeman, D., Green, S., Garety, P. A., Kuipers, E., Hardy, A., ... & Fowler, D. (2007). The association between traumatic experience, paranoia and hallucinations: a test of the predictions of psychological models. *Acta Psychiatrica Scandinavica*, *116*(4), 280-289. DOI: 10.1111/j.1600-0447.2007.01011.x

Grant, B. F., Chou, S. P., Goldstein, R. B., Huang, B., Stinson, F. S., Saha, T. D., ... & Ruan, W. J. (2008). Prevalence, correlates, disability, and comorbidity of DSM-IV borderline personality disorder: results from the Wave 2 National Epidemiologic Survey on Alcohol and Related Conditions. *The Journal of clinical psychiatry*, *69*(4), 533.

Hardy, A., Emsley, R., Freeman, D., Bebbington, P., Garety, P. A., Kuipers, E. E., ... & Fowler, D. (2016). Psychological mechanisms mediating effects between trauma and psychotic symptoms: the role of affect regulation, intrusive trauma memory, beliefs, and depression. *Schizophrenia bulletin*, *42*(suppl_1), S34-S43. https://doi.org/10.1093/schbul/sbv175

Hodgekins, J. M. (2009). *The Nature of Schizotypal Symptoms and Social Recovery in Psychosis* (Doctoral dissertation, University of East Anglia).

Hodgekins, J., Coker, S., Freeman, D., Ray-Glover, K., Bebbington, P., & Garety, P. (2012). Assessing levels of subthreshold psychotic symptoms in the recovery phase: the Schizotypal Symptoms Inventory (SSI). *Journal of Experimental Psychopathology*, *3*(4), 582-593. DOI: 10.5127/jep.021211

Jeon, J. R., Lee, E. H., Lee, S. W., Jeong, E. G., Kim, J. H., Lee, D., & Jeon, H. J. (2012). The early trauma inventory self report-short form: psychometric properties of the korean version. *Psychiatry investigation*, *9*(3), 229-235. DOI: 10.4306/pi.2012.9.3.229

Kilcommons, A. M., Morrison, A. P., Knight, A., & Lobban, F. (2008). Psychotic experiences in people who have been sexually assaulted. *Social psychiatry and psychiatric epidemiology*, *43*(8), 602-611. https://doi.org/10.1007/s00127-007-0303-z

Kraan, T., Velthorst, E., Smit, F., de Haan, L., & van der Gaag, M. (2015). Trauma and recent life events in individuals at ultra high risk for psychosis: review and meta-analysis. *Schizophrenia research*, *161*(2), 143-149. https://doi.org/10.1016/j.schres.2014.11.026

Lang, A. J., & Stein, M. B. (2005). An abbreviated PTSD checklist for use as a screening instrument in primary care. *Behaviour research and therapy*, *43*(5), 585-594. https://doi.org/10.1016/j.brat.2004.04.005

Lang, A. J., Wilkins, K., Roy-Byrne, P. P., Golinelli, D., Chavira, D., Sherbourne, C., ... & Stein, M. B. (2012). Abbreviated PTSD Checklist (PCL) as a guide to clinical response. *General hospital psychiatry*, *34*(4), 332-338. https://doi.org/10.1016/j.genhosppsych.2012.02.003

Leard. (2013). Leard Stastistics. Retrieved from https://statistics.laerd.com/ (accessed 12th February 2017).

Linehan, M. M. (1993). *Cognitive Behavioral Treatment of Borderline Personality Disorder.* New York: Guilford Press

Lowry, P. B., & Gaskin, J. (2014). Partial least squares (PLS) structural equation modeling (SEM) for building and testing behavioral causal theory: When to choose it and how to use it. *IEEE transactions on professional communication*, *57*(2), 123-146.

Marsh, H. W. (1998). Pairwise deletion for missing data in structural equation models: Nonpositive definite matrices, parameter estimates, goodness of fit, and adjusted

sample sizes. *Structural Equation Modeling: A Multidisciplinary Journal*, *5*(1), 22-36. https://doi.org/10.1080/10705519809540087

Moskowitz, A., Read, J., Farrelly, S., Rudegeair, T. & Williams, O. (2010). Are Psychotic Symptoms Traumatic in Origin and Dissociative in Kind? In Dell, P. F., & O'Neil, J. A. (Eds.). *Dissociation and the dissociative disorders: DSM-V and beyond*. New York: Routledge.

Mueser, K. T., Goodman, L. B., Trumbetta, S. L., Rosenberg, S. D., Osher, F. C., Vidaver, R., ... & Foy, D. W. (1998). Trauma and posttraumatic stress disorder in severe mental illness. *Journal of consulting and clinical psychology*,*66*(3), 493. DOI:10.1037/0022-006X.66.3.493

Nicol, K., Pope, M., Romaniuk, L., & Hall, J. (2015). Childhood trauma, midbrain activation and psychotic symptoms in borderline personality disorder. *Translational psychiatry*, *5*(5), e559. DOI:10.1038/tp.2015.53

Osório, F. L., Salum, G. A., Donadon, M. F., Forni-dos-Santos, L., Loureiro, S. R., & Crippa, J. A. S. (2013). Psychometrics properties of early trauma inventory self report–short form (ETISR-SR) for the Brazilian context. *PloS one*,*8*(10), 1-7. https://doi.org/10.1371/journal.pone.0076337

Pec, O., Bob, P., & Raboch, J. (2014). Dissociation in schizophrenia and borderline personality disorder. *Neuropsychiatric disease and treatment*, *10*, 487. DOI: 10.2147/NDT.S57627

Plaza, A., Torres, A., Martin-Santos, R., Gelabert, E., Imaz, M. L., Navarro, P., ... & Garcia-Esteve, L. (2011). Validation and test-retest reliability of early trauma inventory in Spanish postpartum women. *The Journal of nervous and mental disease*, *199*(4), 280. DOI: 10.1097/NMD.0b013e31821245b9

Putnam, F. W., Carlson, E. B., Ross, C. A., Anderson, G., Clark, P., Torem, M., ... & Loewenstein, R. J. (1996). Patterns of dissociation in clinical and nonclinical samples. *The Journal of nervous and mental disease*, *184*(11), 673-679.

Raine, A. (1991). The SPQ: a scale for the assessment of schizotypal personality based on DSM-III-R criteria. *Schizophrenia bulletin*, *17*(4), 555.

Read, J., Fosse, R., Moskowitz, A., & Perry, B. (2014). The traumagenic neurodevelopmental model of psychosis revisited. *Neuropsychiatry*, *4*(1), 65. DOI: 10.2217/npy.13.89

Read, J., Os, J. V., Morrison, A. P., & Ross, C. A. (2005). Childhood trauma, psychosis and schizophrenia: a literature review with theoretical and clinical implications. *Acta Psychiatrica Scandinavica*, *112*(5), 330-350. https://doi.org/10.1521/psyc.64.4.319.18602

Read, J., Perry, B. D., Moskowitz, A., & Connolly, J. (2001). The contribution of early traumatic events to schizophrenia in some patients: a traumagenic neurodevelopmental model. *Psychiatry: Interpersonal and Biological Processes*, *64*(4), 319-345.

Ringle, Christian M., Wende, Sven, & Becker, Jan-Michael. (2015). SmartPLS 3. Bönningstedt: SmartPLS. Retrieved from http://www.smartpls.com

Roepke, S., Vater, A., Preißler, S., Heekeren, H. R., & Dziobek, I. (2013). Social cognition in borderline personality disorder. *Frontiers in Neuroscience*, *6*, 195. https://doi.org/10.3389/fnins.2012.00195

Ross, C. A. (2007). Borderline personality disorder and dissociation. *Journal of trauma & dissociation*, *8*(1), 71-80. DOI: 10.1300/J229v08n01_05

Ruggiero, K. J., Del Ben, K., Scotti, J. R., & Rabalais, A. E. (2003). Psychometric properties of the PTSD Checklist—Civilian version. *Journal of traumatic stress*, *16*(5), 495-502. DOI: 10.1023/A:1025714729117

Seow, L. S. E., Ong, C., Mahesh, M. V., Sagayadevan, V., Shafie, S., Chong, S. A., & Subramaniam, M. (2016). A systematic review on comorbid post-traumatic stress disorder in schizophrenia. *Schizophrenia research*, *176*(2), 441-451. https://doi.org/10.1016/j.schres.2016.05.004

Spauwen, J., Krabbendam, L., Lieb, R., Wittchen, H. U., & Van Os, J. (2006). Impact of psychological trauma on the development of psychotic symptoms: relationship with psychosis proneness. *The British Journal of Psychiatry*,*188*(6), 527-533. DOI: 10.1192/bjp.bp.105.011346

Steil, R., & Ehlers, A. (2000). Dysfunctional meaning of posttraumatic intrusions in chronic PTSD. *Behaviour research and therapy*, *38*(6), 537-558. https://doi.org/10.1016/S0005-7967(99)00069-8

Stevens, L. H., Spencer, H. M., & Turkington, D. (2017). Identifying Four Subgroups of Trauma in psychosis: Vulnerability, psychopathology, and Treatment. *Frontiers in psychiatry*, *8*. https://doi.org/10.3389/fpsyt.2017.00021

Temes, C. M., Magni, L. R., Fitzmaurice, G. M., Aguirre, B. A., Goodman, M., & Zanarini, M. C. (2017). Prevalence and severity of childhood adversity in adolescents with BPD, psychiatrically healthy adolescents, and adults with BPD. *Personality and mental health*, *11*(3), 171-178. DOI: 10.1002/pmh.1387

Thabrew, de Sylvia, & Romans (2012). Evaluating Childhood Adversity. In Fava, G. A., Sonino, N., & Wise, T. N. (Eds.). (2012). *The Psychosomatic Assessment*. Switzerland: Karger Medical and Scientific Publishers.

Van der Kolk, B. A., & Fisler, R. (1995). Dissociation and the fragmentary nature of traumatic memories: Overview and exploratory study. *Journal of traumatic stress*, *8*(4), 505-525. DOI: 10.1002/jts.2490080402

Van IJzendoorn, M. H., & Schuengel, C. (1996). The measurement of dissociation in normal and clinical populations: Meta-analytic validation of the Dissociative Experiences Scale (DES). *Clinical Psychology Review*, *16*(5), 365-382. https://doi.org/10.1016/0272-7358(96)00006-2

Varese, F., Barkus, E., & Bentall, R. P. (2012). Dissociation mediates the relationship between childhood trauma and hallucination-proneness. *Psychological medicine*, *42*(5), 1025-1036. DOI: 10.1017/S0033291711001826

Varese, F., Smeets, F., Drukker, M., Lieverse, R., Lataster, T., Viechtbauer, W., ... & Bentall, R. P. (2012). Childhood adversities increase the risk of psychosis: a meta-analysis of patient-control, prospective-and cross-sectional cohort studies. *Schizophrenia bulletin*, *38*(4), 661-671. https://doi.org/10.1093/schbul/sbs050

Weathers, F. W., Litz, B. T., Herman, D. S., Huska, J. A., & Keane, T. M. (1993). The PTSD Checklist: Reliability, validity, & diagnostic utility. Paper presented at the Annual Meeting of the International Society for Traumatic Stress Studies. *San Antonio, TX*.

Weich, S., Patterson, J., Shaw, R., & Stewart-Brown, S. (2009). Family relationships in childhood and common psychiatric disorders in later life: systematic review of prospective studies. *The British Journal of Psychiatry*, *194*(5), 392-398. DOI: 10.1192/bjp.bp.107.042515

Wickham, S., & Bentall, R. (2016). Are Specific Early-Life Adversities Associated With Specific Symptoms of Psychosis?: A Patient Study Considering Just World

Beliefs as a Mediator. *The Journal of nervous and mental disease*, *204*(8), 606. DOI: 10.1097/NMD.0000000000000511

Winter, D., Bohus, M., & Lis, S. (2017). Understanding Negative Self-Evaluations in Borderline Personality Disorder—a Review of Self-Related Cognitions, Emotions, and Motives. *Current psychiatry reports*, *19*(3), 17. https://doi.org/10.1007/s11920-017-0771-0

Yung, A. R., & Lin, A. (2016). Psychotic experiences and their significance. World Psychiatry, 15(2), 130-131. DOI:10.1002/wps.20328

Zanarini, M. C. & Jager-Hyman, S. (2010). Dissociation in Borderline Personality Disorder. In Dell, P. F., & O'Neil, J. A. (Eds.). *Dissociation and the dissociative disorders: DSM-V and beyond*. New York: Routledge.

Zanarini, M. C., Frankenburg, F. R., Dubo, E. D., Sickel, A. E., Trikha, A., Levin, A., & Reynolds, V. (1998). Axis I comorbidity of borderline personality disorder. *American Journal of Psychiatry (155)*12, 1733-1739. https://doi.org/10.1176/ajp.155.12.1733

Zanarini, M. C., Williams, A. A., Lewis, R. E., Reich, R. B., Vera, S. C., Marino, M. F., ... & Frankenburg, F. R. (1997). Reported pathological childhood experiences associated with the development of borderline personality disorder. *The American journal of psychiatry*, *154*(8), 1101.

Zimmerman, D. W., & Zumbo, B. D. (1993). Rank transformations and the power of the Student t test and Welch t'test for non-normal populations with unequal variances. *Canadian Journal of Experimental Psychology/Revue canadienne de psychologie expérimentale*, *47*(3), 523. DOI: 10.1037/h0078850

CHAPTER 5 – Additional Methodology

Outlining methodological details of empirical paper not discussed in Chapter 4

Word count: 1,490 (excluding references)

5.1. Joint Project

The data collection for the research project outlined in the empirical paper was conducted in tandem with another trainee clinical psychologist. Both trainees were interested in related hypotheses, i.e. how trauma influence later psychopathology, but with specific interests in different variables. Thus, it was agreed that, to maximise benefit and minimise participant burden, data collection for both projects would be shared. Whilst the current project investigated the role of dissociative mechanisms, current PTSD symptoms and trauma-induced mechanisms in relation to symptomatology, the other project explored the role of attachment and emotion regulation in relation to symptomatology (see Appendix C for Power calculations).

Data collection and preparation of the file for data analyses was thus a joint responsibility. Also, although the project allowed two independent theses to be conducted within the data set, it was also designed to allow for more complex analyses at a later stage. For instance, a more detailed follow-up of how the groups differ and more complex path models exploring the influence of all trauma-related variables combined, was undertaken. A closer examination of how variable subscales interact was also be explored. Importantly, this extraction of all relevant information ensures that the benefit of the study is maximised.

5.2. Recruitment Details and Ethical Considerations

This project required careful considerations, especially in terms of participant burden and safety precautions. Asking participants sensitive questions about potential traumatic events, as well as questions about potential symptoms and interpersonal patterns could cause distress in some individuals. Thus, the Participant Information Sheet (see Appendix D1 and D2) was carefully developed in line with discussions with academic and clinical supervisors so that participants could get all the information they

needed to make an informed decision as to whether they wanted to participate. Also, inclusion and exclusion criteria were carefully considered and only individuals that had a care team involved and did not pose with serious current suicide or violence risk were deemed eligible.

Study presentations (see Appendix E1) and information sheets (see Appendix E2) were given to all clinical teams involved in referring potential participants to ensure that they were aware of study requirements. They were also given Eligibility and Diagnostic Checklist (See Appendix F1) to guide identification of eligible participants and given Participant Information Sheets to give to potential participants. Regular visits to the team and follow-up conversations were also an important part of the recruitment process. Posters (see Appendix G1 and G2) were also placed in clinical areas so potential participants could self-refer, although, to be considered eligible, self-referred participants would have to consent to the research team confirming their eligibility with their clinical teams before offering a study appointment. A telephone guidance protocol (see Appendix H) was developed to guide conversations with self-referring participants. All activities were recorded in the Screening and Enrolment Log (see Appendix H2).

Potential participants were provided with information they needed to make an informed decision as to whether they wanted to participate in the project, and they were informed of confidentiality procedures and possible breaches of confidentiality should they reveal risks to themselves or others during participation. It was also repeatedly emphasised to all participants that they could withdraw at any point. A Risk Management Protocol (see Appendix I) was also developed to ensure that appropriate steps would be taken should a participant become distressed during participation in the study.

When participants were offered a study appointment the relevant clinical team was informed, as agreed with participants. Every participant was required to give written consent (see Appendix J1) and complete a Demographic Information Sheet (see Appendix K) before completing the questionnaire booklet (see Appendix L1 to L9). Shorter versions of questionnaires that had good psychometric properties were selected to minimise participant burden. All questionnaires were suitable for both clinical and non-clinical populations.

Visits were also recorded in the participant's clinical notes using pre-generated templates (see Appendix M). To ensure that the same procedure was followed for each participant, Trust-adjusted checklists (see Appendix H3) were followed and completed. Participants were informed that they could withdraw their data up to the point that data analysis took place. Finally, as participants was not paid for their contribution, they were offered a chance to enter a price draw of four £20 Amazon vouchers, as well as asked whether they wanted to receive information regarding the overall study findings (see Appendix N). At the end of the study, four email addresses were picked at random and winners were sent one Amazon voucher each. University of East Anglia's and relevant trust lone working policies and buddying systems were employed to minimise the risk to researchers. Participants were also debriefed and given Aftercare Information (see Appendix O1 and O2). The named contact person in the clinical team was also informed when participation in the study was completed (see Appendix E3).

Online recruitment of the control group is outlined in the Online Procedure Template (see Appendix P). The online survey was designed in a similar fashion as the clinical recruitment; firstly, potential participants had to read an online version of the Participant Information Sheet (see Appendix D2). Secondly, they had to answer questions assessing eligibility (see Appendix F2) and, if deemed eligible, complete an

online consent form (see Appendix J2). Non-eligible participants were redirected to the Aftercare information (see Appendix O3). Thirdly, eligible participants completed the online Demographic Information Sheet before completing the questionnaire booklet. The final page in the online survey for all participants was the Aftercare information. Importantly, on each page of the online survey a CANCEL button at the left-hand corner could be clicked at any time and would redirect participants to this Aftercare page.

Other documentation relevant to the outlined study is presented in the Appendix, including diagrammatic presentation of participant recruitment (see Appendix Q1), diagrammatic presentation of procedure (see Appendix Q2) and Gantt chart (see Appendix R). The planning and conduct of the present study has been guided by the BPS Code of Ethics and Conduct (2009) and the Code of Human Research Ethics (2014). All study documents were handled in line with regulations from the Data Protection Act (1998) and University of East Anglia's confidentiality code of practice (2012). All information sheets given to participants and clinicians were first reviewed by a local Public and Patient Involvement panel and followed guidance from the Research Governance Frameworks (2005) provided by the NHS Health Research Authority. The study protocol and documents were reviewed by a NHS ethical review panel and HRA approval (see Appendix S) was achieved.

5.3. Additional Information on Data Analysis

When assessing all the trauma-related variables, including trauma frequency, and borderline and schizotypal symptoms, for outliers by visually inspecting boxplots, outliers were identified in several of the variables, and for the control group in particular. However, outliers were considered to be genuine unusual values, as we anticipated that scores on these measures will vary in the general population. Thus,

outliers were not rejected and were kept within the dataset, with the exception was seven individuals in the control sample that scored within the clinical range on psychotic and borderline symptoms. They were excluded due to their inability to function as control participants in this context.

When conducting between-groups analyses, Group was entered as independent variable with three levels (psychosis, BPD and non-clinical groups) while current levels of PTSD, trauma-induced cognitions and dissociation were entered as dependent variables. When conducting correlational analyses, severity and type of trauma was entered as predictor variables and dissociation, current level of PTSD, trauma-induced cognitions, borderline and schizotypal symptoms as dependent variables.

As Partial Least Square –Structural Equation Modeling (PLS-SEM) does not offer a (widely acceptable) global goodness-of-fit statistics, each model was assessed on measurement (outer) and structural (inner) fit. Combined, these assessments explore how closely the predicted values of the dependent variables are to the observed values, which provide an idea of the overall model quality (Garson, 2016).

To assess the fit of the formative measurement model, each model was assessed on path loadings and measurement weights, cross-loadings, factor scores and multicollinearity between indicators (Garson, 2016). If the quality assessment of the measurement model was found acceptable, the quality of the structural (inner) model was then assessed, including examination of multicollinearity within the structural model, assessment of structural path coefficients and adjusted R-square (see Garson, 2016 for an extensive description of each quality indicator). As multicollinearity issues were evident between self-reported PTSD symptoms (PCL-C) total) and trauma-induced cognitions (PTCI) in both models, these latent variables were combined into one hypothesised construct. Each model is graphically displayed in Figures 1 and 2.

In the first model, five latent variables were created; childhood trauma (presence or absence of emotional, sexual and physical trauma), borderline symptoms (BSL mean), dissociation (DES-II absorption, amnesia, depersonalisation/derealisation subscales), PTSD symptoms (total PCL-C scale) and trauma-induced cognitions (PTCI negative cognitions about self, about the world and self-blame subscales). In the second model borderline symptoms were replaced by schizotypal symptoms (SSI anomalous experiences, paranoia and social anxiety subscales).

5.4. References

Code of Ethics and Conduct: Guidance published by the ethics committee of the British Psychological Society (2009). United Kingdom: British Psychological Society.

Department of Health. (2005). *Research governance framework for health and social care*. Retrieved June 2016 from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/139565/dh_4122427.pdf

Garson, G. D. (2016). Partial Least Squares: Regression and Structural Equation Models. Asheboro, NC: Statistical Associates Publishers.

Office, S., & Britain, G. (1998). *Data protection act, 1998 (public general acts - Elizabeth II)*. London: Stationery Office Books.

Reeves, M. (2011). Code of human research ethics. Retrieved from http://www.bps.org.uk/sites/default/files/documents/code_of_human_research_ethics.pdf

University of East Anglia (2012). University of East Anglia Guidelines on Good Practice in Research. Retrieved June 2016 from https://www.uea.ac.uk/documents/251484/3124686/Guideline%2Bon%2BGood%2Bpractice%2BDocument%2B2012.pdf/bfa317d7-86ec-4710-b548-13356fd78d40

CHAPTER 6 – Additional Results

Reporting additional findings not outlined in Chapter 4

Word count: 592 (excluding references)

6.1. Symptom Specificity

This chapter reports additional results that were not included in the main empirical paper. This chapter explores whether specific types of trauma can predict specific psychotic symptoms, and whether trauma-related variables can mediate these relationships. Based on findings from the systematic review (Appaiah-Kusi et al., 2017; Hardy et al., 2016; Kilcommons & Morrison, 2005; Wickham & Bentall, 2016), it was predicted that 1) the relationship between childhood sexual trauma and anomalous experiences is influenced by dissociative experiences, and 2) the relationship between childhood emotional trauma and paranoid symptoms is mediated by trauma-induced cognitions.

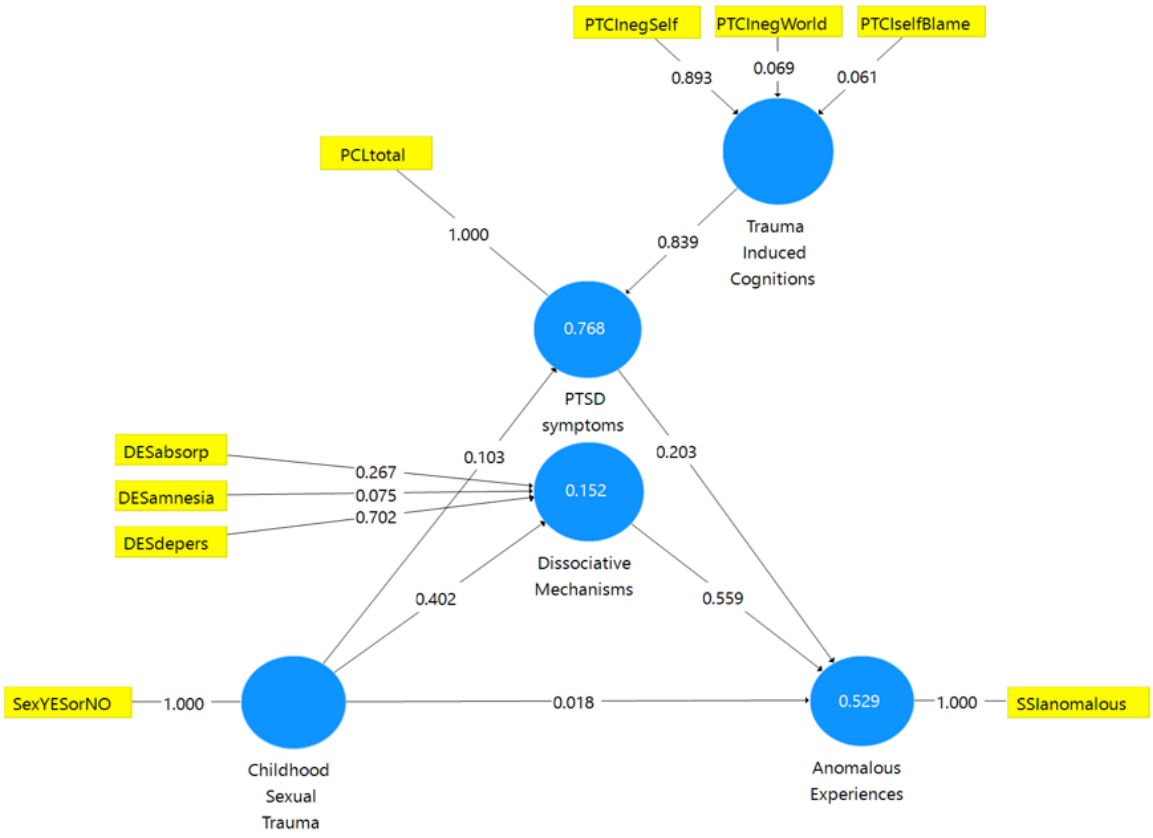
6.1.1. Childhood Sexual Trauma and Anomalous Experiences

The measurement model was found to be well-fitted. Path loadings suggested that all latent variables were reliable, as all variables were large and highly significant (all above .804, $p<.001$). Some indicators had non-significant outer weights (DES absorption, DES amnesia, PTCI negative world cognitions and PTCI self-blame), but remained within the model as loadings were reliable (Garson, 2016). Every indicator loaded well with its intended factor (all loadings above .804) and no indicator correlated more highly with another factor, although cross-loadings showed high correlations with other factors. No multicollinearity problems were evident, as all VIF values were below 4.669.

In the structural model, all VIF values were below 2.590. The path coefficient between childhood sexual trauma and anomalous experiences (i.e. total indirect effect) was large and highly significant, T=3.594, $p<.001$, suggesting that exposure to sexual trauma in childhood is linked to development of anomalous experiences. However, specific indirect effects suggested that the relationship was mediated by dissociative

mechanisms, T=3.020, p=.003. The relationship between sexual trauma and anomalous experience was fully mediated by dissociative mechanisms, as the path coefficient between sexual trauma and anomalous experiences were not significant (p>.05). The model was found to account for a moderate proportion of the variance, 52.9%, of anomalous experiences. The model is presented in Figure 1.

Figure 1. PLS-SEM model examining the relationship between childhood sexual trauma and schizotypal anomalous experiences (N=113).



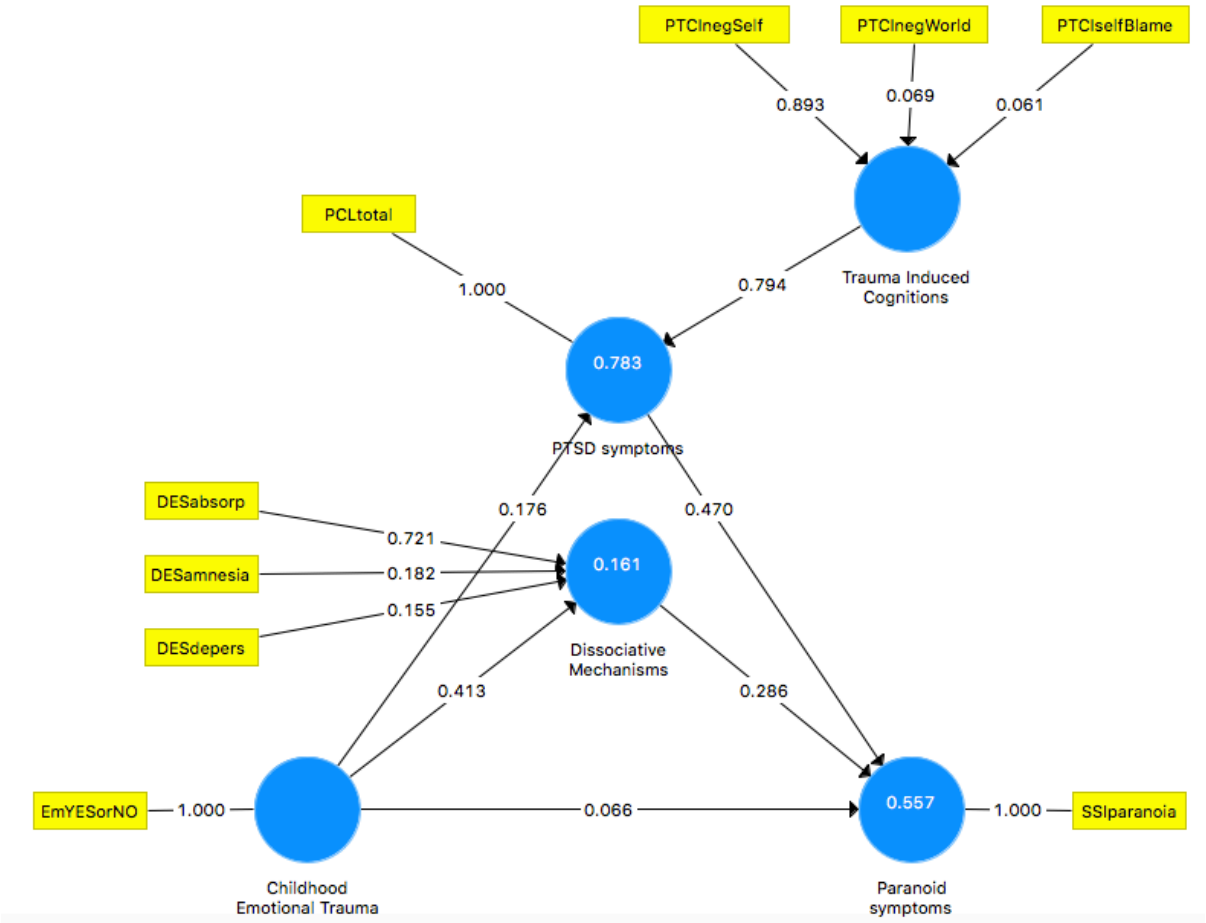
Note. Arrows from indicators to latent variables display outer weights and loadings, whilst paths between latent variables display path (i.e. regression) coefficients. Adjusted R-square is presented within constructs. SexYESorNO = childhood sexual trauma binary variable; DESabsorp = DES-II absorption subscale; DESdepers = DES-II depersonalisation/derealisation subscale; PTCInegSelf = PTCI negative cognitions about self subscale; PTCInegWorld = negative cognitions about the world subscale.

6.1.2. Childhood Emotional Trauma and Paranoia

A well-fitted measurement model was evident. All path loadings were found to be large and highly significant (all above .826, $p<.001$), indicating reliable latent variables. The reliable loadings suggested that the indicators should remain within the model, although some indicators had non-significant outer weights (DES amnesia, DES depersonalisation/ derealisation, PTCI negative world cognitions and PTCI self-blame) (Garson, 2016). Cross-loadings showed that every indicator loaded well with its intended factor (all loadings above .804) and no indicator correlated more highly with another factor, although some indicator had higher correlations with other factors than recommended for a well-fitted model. All VIF values were below 4.669, which suggested that there were no issues with multicollinearity within this model.

The quality of the structural model was then assessed and all values in the structural VIF were below 3.161. The path coefficient between childhood emotional trauma and paranoia (i.e. total indirect effect) was large and highly significant, T=3.808, $p<.001$, suggesting that exposure to emotional trauma in childhood is linked to development of paranoid symptoms. However, when exploring specific indirect effects, the relationship was mediated by PTSD symptoms, T=2.601, p<.009, and dissociative mechanisms, T=2.193, p=.028. Full mediation was achieved by the PTSD symptoms and dissociative mechanisms, as the path coefficient between emotional trauma and paranoia was not significant ($p>.05$). A moderate proportion of the variance in paranoid symptoms was accounted for by the model, as adjusted R-square was 55.7%. The model is presented in Figure 2.

Figure 2. PLS-SEM model examining the relationship between childhood emotional trauma and schizotypal paranoid symptoms (N=113).



Note. Arrows from indicators to latent variables display outer weights and loadings, whilst paths between latent variables display path (i.e. regression) coefficients. Adjusted R-square is presented within constructs. EmYESorNO = childhood emotional trauma binary variable; DESabsorp = DES-II absorption subscale; DESdepers = DES-II depersonalisation/derealisation subscale; PTCInegSelf = PTCI negative cognitions about self subscale; PTCInegWorld = negative cognitions about the world subscale.

6.2. References

Appiah-Kusi, E., Fisher, H. L., Petros, N., Wilson, R., Mondelli, V., Garety, P. A., ... & Bhattacharyya, S. (2017). Do cognitive schema mediate the association between childhood trauma and being at ultra-high risk for psychosis?. *Journal of psychiatric research*, *88*, 89-96. https://doi.org/10.1016/j.jpsychires.2017.01.003

Garson, G. D. (2016). Partial Least Squares: Regression and Structural Equation Models. Asheboro, NC: Statistical Associates Publishers.

Hardy, A., Emsley, R., Freeman, D., Bebbington, P., Garety, P. A., Kuipers, E. E., ... & Fowler, D. (2016). Psychological mechanisms mediating effects between trauma and psychotic symptoms: the role of affect regulation, intrusive trauma memory, beliefs, and depression. *Schizophrenia bulletin*, *42*(suppl_1), S34-S43. https://doi.org/10.1093/schbul/sbv175

Kilcommons, A. M., & Morrison, A. P. (2005). Relationships between trauma and psychosis: an exploration of cognitive and dissociative factors. *Acta Psychiatrica Scandinavica*, *112*(5), 351-359. DOI: 10.1111/j.1600-0447.2005.00623.x

Wickham, S., & Bentall, R. (2016). Are Specific Early-Life Adversities Associated With Specific Symptoms of Psychosis?: A Patient Study Considering Just World Beliefs as a Mediator. *The Journal of nervous and mental disease*, *204*(8), 606. DOI: 10.1097/NMD.0000000000000511

CHAPTER 7 – General Discussion

Summary of thesis aims and findings, integration with theoretical accounts and clinical and research implications

Word count: 3,427 (excluding references)

7.1. Thesis aims revisited

The overall aim of this thesis was to explore how childhood trauma and trauma-related mechanisms are linked to borderline and psychotic symptomatologies. Firstly, critical concepts were discussed in the introduction, including childhood trauma, dissociative mechanisms, posttraumatic stress disorder (PTSD) symptomatology and trauma-induced appraisals. In addition, theoretical accounts of psychosis and borderline personality disorder (BPD) were also examined. Secondly, a systematic review was conducted to explore whether cognitive appraisals in response to trauma played a role in psychotic-like experiences.

Thirdly, the empirical paper explored the role of dissociative mechanisms, current post-traumatic symptoms and trauma-induced appraisals in relation to psychosis and borderline symptomatology, from both a diagnostic and transdiagnostic perspective. Specifically, from a diagnostic perspective, between-group analyses were conducted to see how individuals diagnosed with psychosis, BPD and controls differed in terms of trauma histories, on trauma-related mechanisms and in expressed borderline and psychosis symptoms. Further, from a transdiagnostic perspective, groups were collapsed to explore the associations between the critical variables and to further explore whether different symptomatologies could be explained by different expression of trauma-related mechanisms.

Finally, based on findings reported in the systematic review, two additional models outlined in Chapter 6 explored whether specific trauma types were linked to specific symptoms, and how these relationships were explained by critical trauma-related mechanisms. Due to the overall aim of the thesis, all PLS-SEM models were approached from a transdiagnostic perspective.

7.2. Integrating findings from different thesis elements

Findings from the systematic review suggested that trauma prevalence was high in samples drawn from both the psychoses (e.g. Hardy et al., 2016, Kilcommons & Morrison, 2005) and general (Freeman & Fowler, 2009; Gracie et al., 2007) populations. Type and severity of childhood trauma, as well cognitive appraisal processes, were emphasised as plausible reasons as to why some people might develop psychotic symptoms in response to trauma, whilst some individuals do not.

Specifically, the systematic review found evidence of both a dose-response relationship between childhood trauma and psychotic experiences (e.g. Kilcommons, Morrison, Knight & Lobban, 2008), as well as evidence for symptom specificity. In short, whilst childhood sexual trauma was linked to development of hallucinations (Kilcommons et al., 2008), childhood emotional trauma was found to be related to development of paranoid symptoms (Hardy et al., 2016; Wickham & Bentall, 2016). The latter relationship appeared to be mediated by cognitive appraisals, which has been argued to be a core feature of posttraumatic symptomatology (Dunmore, Clark & Ehlers, 2001; Epstein, 1991; Roth & Newman, 1991).

Although important limitations were discussed, and future research is needed to confirm preliminary conclusions based on the reviewed studies, findings were in line the Traumagenic Neurodevelopmental Model (Read, Perry, Moscowich & Connolly, 2001; Read, Fosse, Moskowitz & Perry, 2013), suggesting that individuals with psychotic experiences have been exposed to a disproportionate amount of stress rather than just being more vulnerable for stress. Findings were also in line with previous research on symptom specificity (see Gibson, Alloy & Ellman, 2016 for a review). It is therefore argued that the findings from the systematic review are consistent with the previous knowledge base, but also provide additional support for the contention that

cognitive appraisals play an important role in expression of specific psychotic symptoms.

The empirical paper and findings reported in the additional results chapter continued to explore the role of trauma and trauma-related mechanisms in borderline and psychotic symptomatologies. Specifically, when using a diagnostic approach within this dataset, the group diagnosed with BPD consistently reported higher levels of childhood trauma, more dissociative experiences, more negative cognitive appraisals and higher expressions of both PTSD, borderline and subclinical psychotic symptoms, when compared to the psychosis group, although some of these differences failed to reach significance. Similarly, the participants diagnosed with psychosis reported higher scores on all measures compared to controls.

The very high scores in the BPD group were not surprising in light of previous knowledge and research. Specifically, individuals diagnosed with BPD tend to report high levels of dissociation, struggle with intra- and interpersonal dynamics and tend to be frequent users of mental health services (DSM-V, APA, 2013; Linehan, 1993; Mellesdal et al., 2014; Mellesdal et al., 2015, NICE, 2009). The finding that the group diagnosed with psychosis scored higher than the control group on all measures was also consistent with previous research, suggesting that individuals diagnosed with psychosis tend to have experienced more trauma, display more trauma-related mechanisms and thus more symptoms than individuals in the general population (Addington et al., 2013; Appaiah-Kusi et al., 2017; Read et al., 2001; 2013).

The finding that individuals diagnosed with BPD scored consistently higher than the psychosis groups on the measure of subclinical psychotic symptoms, although not significantly different, is discussed further below. However, this finding highlighted the importance of exploring symptomatology from a transdiagnostic perspective, as it

enables an alternative understanding of symptom expression across diagnostic groups. When groups were collapsed, and symptomatology was explored transdiagnostically in two Partial Least Square Structural Equation Models (PLS-SEM), PTSD symptoms were an important mediator of both borderline and psychotic symptoms, whilst dissociative mechanisms were not a significant mediator in the borderline model but the strongest mediator in the psychosis model.

Why this is the case is yet to be explored. For instance, the BPD group reported higher levels of dissociative symptoms than the psychosis group, yet dissociative mechanisms only seem to explain psychotic symptoms. Future studies need to explore this further using longitudinal designs and in light of theoretical accounts of dissociation and posttraumatic symptomatology. For instance, the developmental trauma model of dissociation and psychopathology (Schimmenti & Caretti, 2016) outlined in Chapter 1 suggests two inter-related psychopathological pathways. It is possible that differential disruption in these pathways, or even within each pathway, could produce different symptoms.

For instance, hallucinations are sometimes conceptualised as externalisations of internal experiences and it is possible that dissociative processes enable the "detachment" from one's own experiences that creates the experience of thoughts being external voices (Humpston & Broome, 2016). Also, it may be that the dissociative mechanisms captured within the DES-II measure employed in this study are more representative of the processes that are important in psychotic experiences, as opposed to borderline experiences. However, exploration of how different dissociative mechanisms may play different roles in *development* of different symptoms must be confirmed in longitudinal studies.

Symptom specificity was not reported in the empirical paper. Accordingly, the additional results chapter outlined two formative models exploring specific findings from the systematic review. Thus, these additional models were only concerned with psychotic and not borderline symptomatology. The first model within this dataset explored the relationship between childhood sexual trauma and anomalous experiences, which was found to be fully mediated by dissociative mechanisms and PTSD symptoms. The model was found to account for a substantial proportion of the variance, which suggested that dissociative mechanisms and PTSD symptoms, including trauma-induced appraisals, are important mechanisms, explaining why some people may experience anomalous experiences in response to childhood sexual trauma. In line with the first psychosis model reported in the empirical paper, dissociative mechanisms were found to be the strongest mediator in the relationship between childhood trauma and overall subclinical psychotic symptoms.

This is in line with Kilcommons' and Morrison's (2005) findings that argue for a predictive role of dissociation in the development of hallucinations. However, both Wickham and Bentall (2016) and Hardy et al. (2016) have suggested a more direct relationship between childhood sexual abuse and hallucinations. As discussed in the systematic review, because of methodological limitations evident in the studies reviewed, it could be considered potentially premature to conclude that the development of hallucinations follows directly from the experience of trauma. As noted earlier, non-significant findings do not necessarily mean that no relationship exists, and consideration of sample size and potential lack of power to detect mediation effects should be considered.

The second model explored the relationship between childhood emotional trauma and paranoid symptoms, which was also found to be fully mediated by PTSD

symptoms, which was the strongest mediator, and dissociative mechanisms. Again, this is in line with findings from the systematic review, suggesting that cognitive appraisals play a role in this relationship (Hardy et al., 2016; Wickham & Bentall, 2016). However, even though dissociative mechanisms were also a significant mediator within the dataset, only a moderate proportion of the variance was accounted for, suggesting that other critical variables not identified in this model may play a vital role.

Interestingly, whilst dissociative mechanisms were the strongest mediator in the overall subclinical psychotic symptoms model and in the anomalous experiences subscale model, PTSD symptoms was the strongest mediator in the paranoid symptoms subscale model. This suggests that the three psychosis models showed that there are potentially distinct pathways between different trauma types and different psychotic symptoms, and that these pathways may be explained by the different expression of trauma-related mechanisms. If this is confirmed, this would lend support to those arguing against the consideration of schizophrenia being a unitary diagnostic entity (Stevens, Spencer & Turkington, 2017).

7.3. Methodological limitations and strengths

Methodological limitations of the reviewed studies were discussed in detail in the systematic review. In short, inadequate sample sizes and sampling methods were identified as potential limitations, which restrict generalisability. Also, the limited number of studies included was considered a limitation with the review itself, as this restricts validity of conclusions. However, a major strength of the review was its ability to explore psychotic experiences across samples drawn from different populations.

One of the major strengths of the empirical paper was the case-control design employed, in which three samples drawn from three different populations were included. Further, the attempt to explore symptomatology from a diagnostic and a

transdiagnostic perspective, as well as employing path modeling to explore more complex path analyses, can be seen as providing both theoretical and statistical robustness. One weakness however, as identified in the reviewed studies as well, was the sampling method employed, which limited generalisability of the findings.

Another potential consideration is the validity of causality conclusions drawn from the path models. Firstly, more accurate conclusions about causality within the measurement model depend on decisions made regarding the use of formative vs reflective path modeling (Bollen & Lennox, 1991). Our data has been analysed under the assumption of formative models, in which the indicators are hypothesised to underlie the clinical phenomenon. Alternatively expressed, dissociative amnesia, absorption and depersonalisation/derealisation are assumed to cause dissociative mechanisms. In contrast, in reflective models the assumption is that the hypothesised clinical phenomenon, dissociative mechanisms, is causing the observed indicators (Bollen & Lennox, 1991). Based on theoretical assumptions, a reflective model could be an alternative approach to consider when building the model. This debate is however beyond the scope of this thesis, although future studies should continue to explore the validity of using different measurement model approaches.

Secondly, the structural model relies on a theoretically predicted causality. Both the models suggest a causal role of trauma-related mechanisms and this is supported by the finding that in this instance, childhood trauma is very likely to precede the development of symptomatology. However, longitudinal studies as well as continued exploration of theoretically driven model development are required to confirm the models presented here. Further, it should be remembered that inclusion of other relevant variables may impact model estimates (Cohen, Cohen & Aiken, 2003). Thus, inclusion of other variables may contribute to the model, which will increase our

understanding of different symptomatologies. Alternatively, if estimates remain stable after introduction of other variables, this would further support the models presented here. Either way, it should be remembered that correct specification of models is a prerequisite to draw valid and causal conclusions (Cohen et al., 2003; Borsboom, 2008).

7.4. Theoretical implications

Throughout this thesis, the benefit from integrating knowledge arising from both diagnostic and transdiagnostic approaches has been emphasised. For instance, a diagnostic approach may have advantages in terms of guiding both clinical and research practice. The focus on the dose-response relationship between trauma and psychosis (e.g. Trauelsen et al., 2015) and between trauma and PTSD (Steil & Ehlers, 2000) specifically is an example of how the diagnostic perspective has contributed to identification of a link between childhood trauma and symptomatology within specific diagnostic categories.

In contrast, a transdiagnostic approach has clear advantages in terms of understanding causes of symptomatology, understanding complex constellations of symptoms, as well as making important contributions to clinical and research practice. For instance, this thesis has shown that considering a dose-response relationship between childhood trauma and symptoms *across* diagnostic categories may shed some light on the difficulty of understanding why a constellation of symptoms may occur in some individuals. Specifically, individuals diagnosed with BPD scored in the highest range on subclinical psychotic symptoms when compared to individuals diagnosed with psychosis and controls. Although potential reasons for why these findings may be biased was discussed in the empirical paper, it is also possible that individuals diagnosed with BPD actually experience more subclinical psychotic symptoms as a consequence of a more severe trauma history.

From a diagnostic viewpoint however, as discussed in the empirical paper, it is also possible that a comorbid psychotic disorder in the BPD group can account for the high reportings of psychotic experiences (Barnow et al., 2010). However, psychotic disorders were an exclusion criterion in the BPD group, which would suggest that this potential comorbidity goes undetected for a lot of individuals diagnosed with BPD. If so, this may have important treatment implications and future research should continue to explore this further.

This may be in line with other research suggesting a potential dismissal of psychotic symptoms in BPD. For instance, whilst some have used the term "pseudo" hallucinations when discussing voice hearing in BPD and argued that clinicians can differentiate between presentations with "true" and "pseudo" hallucinations (Wearne, Curtis, Genetti, Samuel & Sebastian, 2017), others have argued that this terminology is problematic as it trivialises voice hearing in individuals diagnosed with BPD (Slotema et al., 2012).

In a systematic review, Merrett, Rossel and Castle (2016) compared the experiences of auditory verbal hallucinations in individuals diagnosed with BPD and in individuals diagnosed with a psychotic disorder. The authors reported that psychotic-like symptoms were common in BPD, that similarities exist between the groups in terms of voice phenomenology and location, but, importantly, that there may be a difference in the affective response to voices (Merrett et al., 2016). It is however possible that psychotic symptoms in individuals diagnosed with BPD are more easily dismissed and potentially less acknowledged due to the focus on behavioural aspects of this presentation, potentially in line findings that affective responses to voices may differ between the groups.

Alternatively, these findings can also be considered within a dose-response relationship, in which childhood trauma severity is linked to severity of symptomatology. Specifically, individuals diagnosed with BPD reported both higher levels of childhood trauma and symptom expression in general. Wearne et al. (2017) found that childhood trauma was a better predictor of voices compared to BPD or PTSD diagnosis (Wearne et al., 2017). Thus, a transdiagnostic approach may contribute to our understanding of symptom expression, especially in traumatised individuals, that is not necessarily captured within the diagnostic approach. It is hoped that this perspective, combined with longitudinal approaches, can contribute towards development of more individualised formulations that attempts to understand the causes of symptom development, which in itself, may become a validating and integrative part of the therapy process that can alleviate symptoms (Larkin & Morrison, 2006).

7.5. Clinical implications

Increased theoretical knowledge should be used to develop better clinical practice (Cicchetti and Toth, 2005). Specifically, research evidence and development of theoretical models should guide assessment, formulation and intervention. First, research has shown that clinicians may omit sensitive questions about early maladaptive experiences, and as clients rarely disclose this information without being asked, these barriers can complicate the assessment and treatment of complex psychological trauma (Everett & Gallop, 2001; Read, 2006). As trauma histories are so common in people with mental health difficulties, irrespective of diagnosis, routine trauma assessment should be conducted after training clinicians and staff in; 1) why it is important to ask everyone, 2) when to ask, 3) how to ask, and 4) how to respond to disclosures (see Read, 2006 for an outline of the New Zealand training programme). For the traumatised individual, being asked about their early experiences and understanding that

their symptoms may be related to them being exposed to a disproportionate amount of stress rather than only being vulnerable to stress (Read et al., 2001; Read et al., 2013) has the potential to be a validating process in itself and empower the individual in their recovery process.

Second, in line with cognitive models, the formulation process should explore cognitive and affective responses to trauma that has contributed to the development and maintenance of symptoms (Larkin & Morrison, 2006). Importantly, it is likely that dissociative mechanisms and post-traumatic symptomatology will be expressed during therapy and clinicians thus need to be aware of and know how to respond to expressions of these mechanisms, as well as targeting these mechanisms during intervention.

Although individuals diagnosed with BPD and psychosis both report high levels of similar trauma-related mechanisms, findings from the empirical paper suggested that treating post-traumatic symptomatology is particularly important to alleviate borderline symptoms, whilst treating dissociative mechanisms was particularly important to alleviate psychotic symptoms. In conclusion, conducting a thorough trauma assessment, integrating early maladaptive experiences into the formulation, and include trauma-related mechanisms as important intervention targets, could contribute to alleviate symptoms, irrespective of diagnostic category.

7.6. Research implications and future directions

Although the findings reported in this thesis shed some light on the potential role of different trauma types and differential expression of trauma-related mechanisms in different symptomatologies, we are still far from an understanding of how different types of trauma and differential expression of trauma-related mechanisms interact to produce different symptoms. Future research suggestions have been noted throughout this thesis portfolio, with a particular emphasis on the benefits of continuing to explore

trauma and symptomatology from a transdiagnostic perspective, as well as employing structural equation modeling when exploring symptom expression. Importantly, path modeling should be considered in future studies due to its statistical advantages, such as its ability to deal with small samples and its capacity to allow exploration of net mediation effects when models include several mediators that have been pooled together (Garson, 2016). As emphasised throughout, longitudinal designs are needed to confirm that childhood trauma *causes* activation of trauma mechanisms, which again *causes* development of symptomatology.

Whilst beyond the scope of this thesis, but following the same direction, theory driven hypotheses on the differential impact of hypothesised constructs are also important to explore further. For instance, do different trauma-induced cognitions, e.g. negative cognitions about the world vs negative cognitions about self, differentially impact on different pathways? Does absorption and depersonalisation/derealisation occur in response to different types of trauma and influence development of different symptoms? Further, models exploring both mediation as well as moderation effects of these critical mechanisms are needed.

Importantly, childhood trauma involves so many aspects of maltreatment, which have not been explored in detail here. Also, gender differences in trauma histories and coping mechanisms may have the potential to influence symptomatology, but this was not explored in this thesis. Future research should continue to explore how different types of trauma, as well as gender differences in trauma histories and potential gender differences in coping mechanisms contribute to development and maintenance of different symptoms.

7.7. Conclusion

This thesis aimed to explore the consequences of childhood trauma in terms of the development of later symptomatology. Importantly, both diagnostic and transdiagnostic hypotheses have been explored and attempts have been made at integrating findings with previous theoretical accounts and research. Specifically, findings from the systematic review suggested symptom specificity, which, in line with previous research, found that specific types of trauma were related to specific types of psychotic symptoms. Importantly, the studies reviewed also implicated specific trauma-related mechanisms that influenced these relationships. Findings in the additional results chapter explored these findings further and were, within this dataset, able to confirm some of the findings reported in the systematic review, as well as identifying other important trauma-related mechanisms within these relationships.

Findings from the empirical paper lend support towards the importance of a transdiagnostic approach to symptomatologies that are considered possible consequences of childhood trauma. The use of complex path modeling was able to overcome some of the statistical challenges observed in previous research, as well indicating areas for future research. Finally, the thesis portfolio attempted to integrate knowledge from theoretical accounts and previous research with current findings, as well as considering implications for clinical practice and further research.

7.8. References

Addington, J., Stowkowy, J., Cadenhead, K. S., Cornblatt, B. A., McGlashan, T. H., Perkins, D. O., ... & Cannon, T. D. (2013). Early traumatic experiences in those at clinical high risk for psychosis. *Early intervention in psychiatry*, *7*(3), 300-305. DOI: 10.1111/eip.12020

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5®)*. Arlington, VA: American Psychiatric Pub.

Appiah-Kusi, E., Fisher, H. L., Petros, N., Wilson, R., Mondelli, V., Garety, P. A., ... & Bhattacharyya, S. (2017). Do cognitive schema mediate the association between childhood trauma and being at ultra-high risk for psychosis?. *Journal of psychiatric research*, *88*, 89-96. https://doi.org/10.1016/j.jpsychires.2017.01.003

Barnow, S., Arens, E. A., Sieswerda, S., Dinu-Biringer, R., Spitzer, C., & Lang, S. (2010). Borderline personality disorder and psychosis: a review. *Current psychiatry reports*, *12*(3), 186-195. https://doi.org/10.1007/s11920-010-0107-9

Bollen, K., & Lennox, R. (1991). Conventional wisdom on measurement: A structural equation perspective. *Psychological bulletin*, *110*(2), 305.

Borsboom, D. (2008). Psychometric perspectives on diagnostic systems. *Journal of clinical psychology*, *64*(9), 1089-1108. DOI: 10.1002/jclp.20503

Cicchetti, D., & Toth, S. L. (1995). A developmental psychopathology perspective on child abuse and neglect. *Journal of the American Academy of Child & Adolescent Psychiatry*, *34*(5), 541-565. https://doi.org/10.1097/00004583-199505000-00008

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression - Correlation analysis for the behavioral sciences* (3 ed.). New York: Lawrence Erlbaum Associates, Inc.

Dunmore, E., Clark, D. M., & Ehlers, A. (2001). A prospective investigation of the role of cognitive factors in persistent posttraumatic stress disorder (PTSD) after physical or sexual assault. *Behaviour research and therapy*, *39*(9), 1063-1084. https://doi.org/10.1016/S0005-7967(00)00088-7

Epstein, S. (1991). Impulse control and self-destructive behavior. In Lipsitt, L. P. & Mitnick L. L. (Eds). *Selfregulatory behavior and risk-taking: Causes and consequences*. New Jersey: Ablex Publishing Corporation.

Everett, B., & Gallop, R. (2000). *The link between childhood trauma and mental illness: Effective interventions for mental health professionals*. California, US: Sage Publications.

Freeman, D., & Fowler, D. (2009). Routes to psychotic symptoms: trauma, anxiety and psychosis-like experiences. *Psychiatry research*, *169*(2), 107-112. https://doi.org/10.1016/j.psychres.2008.07.009

Garson, G. D. (2016). Partial Least Squares: Regression and Structural Equation Models. Asheboro, NC: Statistical Associates Publishers.

Gibson, L. E., Alloy, L. B., & Ellman, L. M. (2016). Trauma and the psychosis spectrum: a review of symptom specificity and explanatory mechanisms. *Clinical psychology review*, *49*, 92-105. https://doi.org/10.1016/j.cpr.2016.08.003

Gracie, A., Freeman, D., Green, S., Garety, P. A., Kuipers, E., Hardy, A., ... & Fowler, D. (2007). The association between traumatic experience, paranoia and hallucinations: a test of the predictions of psychological models. *Acta*

Psychiatrica Scandinavica, *116*(4), 280-289. DOI: 10.1111/j.1600-0447.2007.01011.x

Hardy, A., Emsley, R., Freeman, D., Bebbington, P., Garety, P. A., Kuipers, E. E., ... & Fowler, D. (2016). Psychological mechanisms mediating effects between trauma and psychotic symptoms: the role of affect regulation, intrusive trauma memory, beliefs, and depression. *Schizophrenia bulletin*, *42*(suppl_1), S34-S43. https://doi.org/10.1093/schbul/sbv175

Humpston, C. S., & Broome, M. R. (2016). The spectra of soundless voices and audible thoughts: Towards an integrative model of auditory verbal hallucinations and thought insertion. *Review of Philosophy and Psychology*, *7*(3), 611-629. DOI: 10.1007/s13164-015-0232-9

Kilcommons, A. M., & Morrison, A. P. (2005). Relationships between trauma and psychosis: an exploration of cognitive and dissociative factors. *Acta Psychiatrica Scandinavica*, *112*(5), 351-359. DOI: 10.1111/j.1600-0447.2005.00623.x

Kilcommons, A. M., Morrison, A. P., Knight, A., & Lobban, F. (2008). Psychotic experiences in people who have been sexually assaulted. *Social psychiatry and psychiatric epidemiology*, *43*(8), 602-611. https://doi.org/10.1007/s00127-007-0303-z

Larkin, W. & Morrison, A. P. (2007). Relationships between trauma and psychosis: from theory to therapy. In Larkin, W., & Morrison, A. P. (Eds.). (2007). *Trauma and psychosis: New directions for theory and therapy*. West Sussex: Routledge.

Linehan, M. M. (1993). *Cognitive Behavioral Treatment of Borderline Personality Disorder.* New York: Guilford Press.

Mellesdal, L., Gjestad, R., Johnsen, E., Jørgensen, H. A., Oedegaard, K. J., Kroken, R. A., & Mehlum, L. (2015). Borderline Personality Disorder and Posttraumatic Stress Disorder at Psychiatric Discharge Predict General Hospital Admission for Self-Harm. *Journal of traumatic stress*, *28*(6), 556-562. DOI: 10.1002/jts.22053

Mellesdal, L., Kroken, R. A., Lutro, O., Wentzel-Larsen, T., Kjelby, E., Oedegaard, K. J., ... & Mehlum, L. (2014). Self-harm induced somatic admission after discharge from psychiatric hospital–a prospective cohort study. *European Psychiatry*, *29*(4), 246-252. https://doi.org/10.1016/j.eurpsy.2013.06.006

Merrett, Z., Rossell, S. L., & Castle, D. J. (2016). Comparing the experience of voices in borderline personality disorder with the experience of voices in a psychotic disorder: A systematic review. *Australian & New Zealand Journal of Psychiatry*, *50*(7), 640-648. https://doi.org/10.1177/0004867416632595

National Institute for Health and Clinical Excellence. (2009). Borderline Personality Disorder: Recognition and Management. Retrieved September 2017 from https://www.nice.org.uk/guidance/cg78

Read (2006). Breaking the silence: learning why, when and how to ask about trauma, and how to respond to disclosures. In Larkin, W., & Morrison, A. P. (Eds.). (2007). *Trauma and psychosis: New directions for theory and therapy*. Routledge.

Read, J., Fosse, R., Moskowitz, A., & Perry, B. (2014). The traumagenic neurodevelopmental model of psychosis revisited. *Neuropsychiatry*, *4*(1), 65. DOI: 10.2217/npy.13.89

Read, J., Perry, B. D., Moskowitz, A., & Connolly, J. (2001). The contribution of early traumatic events to schizophrenia in some patients: a traumagenic

neurodevelopmental model. *Psychiatry: Interpersonal and Biological Processes*, *64*(4), 319-345. https://doi.org/10.1521/psyc.64.4.319.18602

Roth, S., & Newman, E. (1991). The process of coping with sexual trauma. *Journal of Traumatic Stress*, *4*(2), 279-297. DOI: 10.1002/jts.2490040209

Schimmenti, A., & Caretti, V. (2016). Linking the overwhelming with the unbearable: Developmental trauma, dissociation, and the disconnected self. *Psychoanalytic Psychology*, *33*(1), 106. http://dx.doi.org/10.1037/a0038019

Slotema, C. W., Daalman, K., Blom, J. D., Diederen, K. M., Hoek, H. W., & Sommer, I. E. C. (2012). Auditory verbal hallucinations in patients with borderline personality disorder are similar to those in schizophrenia. *Psychological medicine*, *42*(9), 1873-1878. DOI: 10.1017/S0033291712000165

Steil, R., & Ehlers, A. (2000). Dysfunctional meaning of posttraumatic intrusions in chronic PTSD. *Behaviour research and therapy*, *38*(6), 537-558. https://doi.org/10.1016/S0005-7967(99)00069-8

Stevens, L. H., Spencer, H. M., & Turkington, D. (2017). Identifying Four Subgroups of Trauma in psychosis: Vulnerability, psychopathology, and Treatment. *Frontiers in psychiatry*, *8*. https://doi.org/10.3389/fpsyt.2017.00021

Trauelsen, A. M., Bendall, S., Jansen, J. E., Nielsen, H. G. L., Pedersen, M. B., Trier, C. H., ... & Simonsen, E. (2015). Childhood adversity specificity and dose-response effect in non-affective first-episode psychosis. *Schizophrenia research*, *165*(1), 52-59. https://doi.org/10.1016/j.schres.2015.03.014

Wearne, D., Curtis, G. J., Genetti, A., Samuel, M., & Sebastian, J. (2017). Where pseudo-hallucinations meet dissociation: a cluster analysis. *Australasian Psychiatry*, *25*(4), 364-368. https://doi.org/10.1177/1039856217695706

Wickham, S., & Bentall, R. (2016). Are Specific Early-Life Adversities Associated With Specific Symptoms of Psychosis? A Patient Study Considering Just World Beliefs as a Mediator. *The Journal of nervous and mental disease*, *204*(8), 606. DOI: 10.1097/NMD.0000000000000511

8. Appendices

Appendix A: QualSyst rating checklist for quantitative studies

Appendix B: Authors Guidelines for submission to British Journal of Clinical Psychology

Appendix C: Power Calculations

Appendix D1: Participant Information Sheet – clinical groups

Appendix D2: Participant Information Sheet – non-clinical group (online version)

Appendix E1: Team presentation template

Appendix E2: Clinician Information Sheet

Appendix E3: Clinician Information Letter

Appendix F1: Eligibility and Diagnostic Checklist – clinical groups

Appendix F2: Eligibility and Diagnostic Checklist – non-clinical group (online version)

Appendix G1: Poster – Borderline Personality Disorder

Appendix G2: Poster – Psychosis

Appendix H1: Telephone guidance protocol

Appendix H2: Screening and Enrolment Log

Appendix H3: Trust-adjusted Checklist

Appendix I: Risk Management Protocol

Appendix J1: Consent form – clinical groups

Appendix J2: Consent form – non-clinical group (online version)

Appendix K: Demographic Information Sheet

Appendix L1: Early Trauma Inventory Self Report-Short Form (ETISR-SF)

Appendix L2: 6-Item Post Traumatic Stress Disorder Checklist – Civilian Form (PCL-C)

Appendix L3: The Psychosis Attachment Measure (PAM)

Appendix A. QualSyst rating checklist for quantitative studies

Table 1. Checklist for assessing the quality of quantitative studies

Criteria		YES (2)	PARTIAL (1)	NO (0)	N/A
1	Question / objective sufficiently described?				
2	Study design evident and appropriate?				
3	Method of subject/comparison group selection or source of information/input variables described and appropriate?				
4	Subject (and comparison group, if applicable) characteristics sufficiently described?				
5	If interventional and random allocation was possible, was it described?				
6	If interventional and blinding of investigators was possible, was it reported?				
7	If interventional and blinding of subjects was possible, was it reported?				
8	Outcome and (if applicable) exposure measure(s) well defined and robust to measurement / misclassification bias? Means of assessment reported?				
9	Sample size appropriate?				
10	Analytic methods described/justified and appropriate?				
11	Some estimate of variance is reported for the main results?				
12	Controlled for confounding?				
13	Results reported in sufficient detail?				
14	Conclusions supported by the results?				

Appendix B. Authors Guidelines for submission to British Journal of Clinical Psychology

British Journal of
Clinical Psychology

British Journal of Clinical Psychology

Edited By: Jessica Grisham
Impact Factor: 3.0
ISI Journal Citation Reports © Ranking: 2016: 24/121 (Psychology Clinical)
Online ISSN: 2044-8260

Author Guidelines

The British Journal of Clinical Psychology publishes original contributions to scientific knowledge in clinical psychology. This includes descriptive comparisons, as well as studies of the assessment, aetiology and treatment of people with a wide range of psychological problems in all age groups and settings. The level of analysis of studies ranges from biological influences on individual behaviour through to studies of psychological interventions and treatments on individuals, dyads, families and groups, to investigations of the relationships between explicitly social and psychological levels of analysis.

All papers published in The British Journal of Clinical Psychology are eligible for Panel A: Psychology, Psychiatry and Neuroscience in the Research Excellence Framework (REF).

The following types of paper are invited:

- Papers reporting original empirical investigations
- Theoretical papers, provided that these are sufficiently related to the empirical data
- Review articles which need not be exhaustive but which should give an interpretation of the state of the research in a given field and, where appropriate, identify its clinical implications
- Brief reports and comments

1. Circulation

The circulation of the Journal is worldwide. Papers are invited and encouraged from authors throughout the world.

2. Length

The word limit for papers submitted for consideration to BJCP is 5000 words and any papers that are over this word limit will be returned to the authors. The word limit does not include the abstract, reference list, figures, or tables. Appendices however are included in the word limit. The Editors retain discretion to publish papers beyond this length in cases where the clear and concise expression of the scientific content requires greater length. In such a case, the authors should contact the Editors before submission of the paper.

3. Submission and reviewing

All manuscripts must be submitted via Editorial Manager. The Journal operates a policy of anonymous (double blind) peer review. We also operate a triage process in which submissions that are out of scope or otherwise inappropriate will be rejected by the editors without external peer review to avoid unnecessary delays. Before submitting, please read the terms and conditions of submission and the declaration of competing interests. You may also like to use the Submission Checklist to help you prepare your paper.

4. Manuscript requirements

• Contributions must be typed in double spacing with wide margins. All sheets must be numbered.

• Manuscripts should be preceded by a title page which includes a full list of authors and their affiliations, as well as the corresponding author's contact details. You may like to use this template. When entering the author names into Editorial Manager, the corresponding author will be asked to provide a CRediT contributor role to classify the role that each author played in creating the manuscript. Please see the Project CRediT website for a list of roles.

• The main document must be anonymous. Please do not mention the authors' names or affiliations (including in the Method section) and refer to any previous work in the third person.

• Tables should be typed in double spacing, each on a separate page with a self-explanatory title. Tables should be comprehensible without reference to the text. They should be placed at the end of the manuscript but they must be mentioned in the text.

• Tables should be typed in double spacing, each on a separate page with a self-explanatory title. Tables should be comprehensible without reference to the text. They should be placed at the end of the manuscript but they must be mentioned in the text.

• Figures can be included at the end of the document or attached as separate files, carefully labelled in initial capital/lower case lettering with symbols in a form consistent with text use. Unnecessary background patterns, lines and shading should be avoided. Captions should be listed on a separate sheet. The resolution of digital images must be at least 300 dpi. All figures must be mentioned in the text.

• All papers must include a structured abstract of up to 250 words under the headings: Objectives, Methods, Results, Conclusions. Articles which report original scientific research should also include a heading 'Design' before 'Methods'. The 'Methods' section for systematic reviews and theoretical papers should include, as a minimum, a description of the methods the author(s) used to access the literature they drew upon. That is, the abstract should summarize the databases that were consulted and the search terms that were used.

• All Articles must include Practitioner Points – these are 2–4 bullet points to detail the positive clinical implications of the work, with a further 2–4 bullet points outlining cautions or limitations of the study. They should be placed below the abstract, with the heading 'Practitioner Points'.

• For reference citations, please use APA style. Particular care should be taken to ensure that references are accurate and complete. Give all journal titles in full and provide DOI numbers where possible for journal articles.

• SI units must be used for all measurements, rounded off to practical values if appropriate, with the imperial equivalent in parentheses.

• In normal circumstances, effect size should be incorporated.

• Authors are requested to avoid the use of sexist language.

• Authors are responsible for acquiring written permission to publish lengthy quotations, illustrations, etc. for which they do not own copyright. For guidelines on editorial style, please consult the APA Publication Manual published by the American Psychological Association.

If you need more information about submitting your manuscript for publication, please email Melanie Seddon, Managing Editor (bjc@wiley.com) or phone +44 (0) 1243 770 108.

5. Brief reports and comments

These allow publication of research studies and theoretical, critical or review comments with an essential contribution to make. They should be limited to 2000 words, including references. The abstract should not exceed 120 words and should be structured under these headings: Objective, Method, Results, Conclusions. There should be no more than one table or figure, which should only be included if it conveys information more efficiently than the text. Title, author name and address are not included in the word limit.

6. Supporting Information

BJC is happy to accept articles with supporting information supplied for online only publication. This may include appendices, supplementary figures, sound files, videoclips etc. These will be posted on Wiley Online Library with the article. The print version will have a note indicating that extra material is available online. Please indicate clearly on submission which material is for online only publication. Please note that extra online only material is published as supplied by the author in the same file format and is not copyedited or typeset. Further information about this service can be found at http://authorservices.wiley.com/bauthor/suppmat.asp

7. Copyright and licenses

If your paper is accepted, the author identified as the formal corresponding author for the paper will receive an email prompting them to login into Author Services, where via the Wiley Author Licensing Service (WALS) they will be able to complete the license agreement on behalf of all authors on the paper.

For authors signing the copyright transfer agreement

If the OnlineOpen option is not selected the corresponding author will be presented with the copyright transfer agreement (CTA) to sign. The terms and conditions of the CTA can be previewed in the samples associated with the Copyright FAQs.

For authors choosing OnlineOpen

If the OnlineOpen option is selected the corresponding author will have a choice of the following Creative Commons License Open Access Agreements (OAA):

- Creative Commons Attribution Non-Commercial License OAA

- Creative Commons Attribution Non-Commercial -NoDerivs License OAA

To preview the terms and conditions of these open access agreements please visit the Copyright FAQs and you may also like to visit the Wiley Open Access Copyright and Licence page.

If you select the OnlineOpen option and your research is funded by The Wellcome Trust and members of the Research Councils UK (RCUK) or the Austrian Science Fund (FWF) you will be given the opportunity to publish your article under a CC-BY license supporting you in complying with your Funder requirements. For more information on this policy and the Journal's compliant self-archiving policy please visit our Funder Policy page.

8. Colour illustrations

Colour illustrations can be accepted for publication online. These would be reproduced in greyscale in the print version. If authors would like these figures to be reproduced in colour in print at their expense they should request this by completing a Colour Work Agreement form upon acceptance of the paper. A copy of the Colour Work Agreement form can be downloaded **here**.

9. Pre-submission English-language editing

Authors for whom English is a second language may choose to have their manuscript professionally edited before submission to improve the English. A list of independent suppliers of editing services can be found at http://authorservices.wiley.com/bauthor/english_language.asp. All services are paid for and arranged by the author, and use of one of these services does not guarantee acceptance or preference for publication.

10. Author Services

Author Services enables authors to track their article – once it has been accepted – through the production process to publication online and in print. Authors can check the status of their articles online and choose to receive automated e-mails at key stages of production. The author will receive an e-mail with a unique link that enables them to register and have their article automatically added to the system. Please ensure that a complete e-mail address is provided when submitting the manuscript. Visit http://authorservices.wiley.com/bauthor/ for more details on online production tracking and for a wealth of resources including FAQs and tips on article preparation, submission and more.

11. The Later Stages

The corresponding author will receive an email alert containing a link to a web site. A working e-mail address must therefore be provided for the corresponding author. The proof can be downloaded as a PDF (portable document format) file from this site. Acrobat Reader will be required in order to read this file. This software can be downloaded (free of charge) from the following web site: http://www.adobe.com/products/acrobat/readstep2.html.

This will enable the file to be opened, read on screen and annotated direct in the PDF. Corrections can also be supplied by hard copy if preferred. Further instructions will be sent with the proof. Excessive changes made by the author in the proofs, excluding typesetting errors, will be charged separately.

12. Early View

British Journal of Clinical Psychology is covered by the Early View service on Wiley Online Library. Early View articles are complete full-text articles published online in advance of their publication in a printed issue. Articles are therefore available as soon as they are ready, rather than having to wait for the next scheduled print issue. Early View articles are complete and final. They have been fully reviewed, revised and edited for publication, and the authors' final corrections have been incorporated. Because they are in final form, no changes can be made after online publication. The nature of Early View articles means that they do not yet have volume, issue or page numbers, so they cannot be cited in the traditional way. They are cited using their Digital Object Identifier (DOI) with no volume and issue or pagination information. E.g., Jones, A.B. (2010). Human rights Issues. *Human Rights Journal*. Advance online publication. doi:10.1111/j.1467-9299.2010.00300.x

Further information about the process of peer review and production can be found in this document: What happens to my paper? Appeals are handled according to the procedure recommended by COPE.

Appendix C. Power Calculations

Effect sizes reported in the previous literature provided the basis for sample size calculation; effect sizes (Cohen's *d*) tend to be large when exploring mean difference between psychotic samples and controls (1.277; Sheffield, Williams, Blackford & Heckers, 2013) and between BPD samples and controls (2.428; Nicol et al., 2015) on trauma measures. Similarly, for dissociation, effect sizes between psychotic samples and controls and between BPD samples and controls are found to be 0.711 and 1.046, respectively (Putnam et al., 1996).

Considering the very large effect sizes between psychosis and controls and between BPD and controls reported in the previous literature, this suggests that individuals with mental health difficulties vary greatly on trauma-related measures compared to controls. If these variables can also explain the reasons for why some individuals develop BPD and psychotic disorder, effect sizes should also be large between BPD and psychosis groups. For instance, a larger effect size, i.e. 0.7, would be considered more meaningful than a smaller effect size. For instance, if a larger effect size is found when exploring the difference in severity or type of childhood trauma between the two groups, this may increase our understanding of why different mental health issues is developed in response to trauma. More details on power calculation is outlined in empirical paper.

References

Nicol, K., Pope, M., Romaniuk, L., & Hall, J. (2015). Childhood trauma, midbrain activation and psychotic symptoms in borderline personality disorder.*Translational psychiatry*, *5*(5), e559.

Putnam, F. W., Carlson, E. B., Ross, C. A., Anderson, G., Clark, P., Torem, M., ... & Loewenstein, R. J. (1996). Patterns of dissociation in clinical and nonclinical samples. *The Journal of nervous and mental disease*, *184*(11), 673-679.

Sheffield, J. M., Williams, L. E., Blackford, J. U., & Heckers, S. (2013). Childhood sexual abuse increases risk of auditory hallucinations in psychotic disorders. *Comprehensive psychiatry*, *54*(7), 1098-1104.

Appendix D1. Participant Information Sheet – clinical groups

Participant Information Sheet Version 1, September 2016

University of East Anglia

Exploring the impact of trauma and developmental factors in individuals with mental health difficulties

We would like to invite people who are currently receiving support for Borderline Personality Disorder or Psychosis to take part our research study. Before you make the choice if you want to take part, it is important you understand why the research is being done and what the research will involve.

Please ask us if there is anything you do not understand or if you would like any more information – there is no rush to take part, please talk to your key worker, family or friends if you wish before deciding.

Why is the study being done?

The main aim of our study is to get a better understanding of how childhood trauma can impact on mental health later in life. To do this, our study will look at how childhood trauma can influence how we how we think about ourselves and the world. We will also look at how childhood trauma can impact on the way we relate to others (attachment) and manage our emotions (the different behaviours used to manage difficult emotions). By looking at how these factors interact, we hope to increase the understanding of why and how mental health difficulties develop, which could help to contribute towards developing more effective treatments.

Participant Information Sheet Version 1, September 2016

Why have I been invited to take part?

We are inviting people to participate who are receiving NHS mental health care support for Psychosis or Borderline Personality Disorder. Your clinical team think you may be interested in taking part and have agreed for us to approach you.

Our project aims to recruit a total of 120 individuals over an 18 months period. This will include 40 individuals who are not receiving NHS mental health support and 80 individuals who are receiving NHS mental health support, in which 40 participants present with Psychosis and 40 present with Borderline Personality Disorder.

Do I have to take part? What happens if I change my mind?

No, taking part in this study is completely voluntary. If you do not wish to take part please tell the researcher. There will be no judgement or hard feelings from anyone and it will not affect the care that you receive now or in the future in any way. If you decide you would like to take part you are free to withdraw at any time and you do not have to give any reason.

What will I have to do if I take part?

If you do decide to take part the researcher will confirm that you understand the information in this leaflet and if you wish to continue, you will be asked to sign a consent form. The study will involve you completing a series of questionnaires. The questionnaires will ask you about your current mental health, possible childhood trauma, thoughts you may currently have, views on close relationships, and your experience and management of emotions.

The study questionnaires will be completed at your own pace and can be carried out in one go or over a few meetings. Taking part will take no longer than two hours in total and we will always try to make appointments at times and locations that suit you. The study will take place in a private room or where you feel most comfortable and we will be present until you have completed all questionnaires should you have any questions.

What are the possible disadvantages and risks of taking part?

All study questionnaires have been used on a large number of people in the UK and the world and it is key that people find them acceptable. Even so, the questions could cause someone to become upset. You do not have to answer questions you do not want to and you can stop filling in the questionnaires at any time.

A researcher will be present throughout and will provide advice and support if you become distressed. At any point if you or the researcher feel that you are in immediate danger to yourself or others they will assist you to immediately attend the local hospital A&E department. If you feel very distressed following taking part we advise you to speak to professionals involved in your care and seek medical advice where required. If you feel very distressed during out of hours, we suggest you use the out of hour's contact that we will give to you.

What are the possible benefits?

You may not benefit directly from taking part in the study. The results from this study will hopefully increase our understanding of how childhood trauma is linked to mental health difficulties later in life. Hopefully, this can contribute towards better care for individuals presenting with Borderline Personality Disorder and Psychosis.

What about expenses?

Although we cannot pay for your time or travel expenses, you will be invited to enter into a prize draw to receive one of four £20 amazon vouchers as a thank you for taking part in this research.

Will my taking part in the study be kept confidential?

All information collected about you during the course of the research will be kept strictly confidential and all identifiable information (your name and address) will be removed from the data. Throughout we will follow ethical and legal practice including upholding the Data Protection Act of 1998 regarding data collection, storage and destruction.

As you are receiving support from a mental health NHS Trust, a general letter will be sent to your clinical team to let them know you have participated in the study. A copy of your consent form and a copy of this leaflet will be copied into your medical notes. Unless there is information suggesting risk of harm to you or others, or unless you specifically request that we inform your care team of any specific information you have given, all the information collected in this study will not be exchanged with any other organisations or your General Practitioner (GP) without your consent.

What happens to my information after the study is completed?

You have the right to withdraw your information collected in the study questionnaires any time before the data is analysed, which will be around December 2017. When the study is completed, the data from the study will be kept for 10 years after the last publication, in accordance with the University of East Anglia's policy on storage of personal data. The study will also comply with any specific guidance provided by your NHS trust. Consent forms will be retained as essential documents, but items such as contact details will be destroyed in accordance with appropriate policies as soon as they are no longer needed.

What will happen to the results of the research study?

The study will be written up as partial fulfilment of a Doctorate in Clinical Psychology at the University of East Anglia and is planned to be completed in 18 months. The research findings will be submitted to a relevant scientific journal and if you are interested, we will feed back the overall study results to you at the end of this time period.

What if there is a problem?

If you have concerns about any aspect of this study, you should ask to speak to the researcher who will do their best to answer your questions (see contact number below). If they are unable to resolve your concern or you wish to make a formal complaint, you can contact Programme Director Professor Kenneth Laidlaw on K.Laidlaw@uea.ac.uk.

In the event that something does go wrong and you are harmed during the study due to negligence, then you may have legal grounds for action against The University of East Anglia, who are the sponsors of this research, however, you may have to pay your legal costs.

The University of East Anglia has cover for no fault compensation for bodily injury, mental injury or death where the injury resulted from a trial or procedure you received as part of the trial. This would be subject to policy terms and conditions. Any payment would be without legal commitment. (Please ask if you want more information).

Who is organising and funding the research?

All study expenses come from a budget available via the Department of Clinical Psychology within the University of East Anglia.

Who has reviewed the study?

All NHS based studies are checked by an independent group of people called a Research Ethics Committee. The Research Ethics Committee is devoted to protect your safety, rights, wellbeing and dignity. The study protocol has been reviewed and given a favourable opinion from the NHS ethics committee (*reference no.*) and a research sub-committee from the Department of Clinical Psychology within the University of East Anglia (*reference no.*).

Contact for further information

If you would like further information about the study please contact:

Researchers: **Cat George & Desire Furnes**
Telephone: ***Study mobile number(s) inserted here***
Email: **study email inserted here@nhs.net**

Thank you for considering taking part in this research.

Please take the time to carefully consider the information given and discuss with your family, friends or mental health team if you wish.

Appendix D2. Participant Information Sheet – non-clinical group (online version)

Participant Information Sheet Version 1, September 2016

University of East Anglia

Exploring the impact of trauma and developmental factors in individuals with mental health difficulties

We would like to invite people who are not currently or have you ever been under the care of mental health NHS teams to take part our research study. Before you make the choice if you want to take part, it is important you understand why the research is being done and what the research will involve.

Please ask us if there is anything you do not understand or if you would like any more information – there is no rush to take part, please talk to your family or friends if you wish before deciding.

Why is the study being done?

The main aim of our study is to get a better understanding of how childhood trauma can impact on mental health later in life. To do this, our study will look at how childhood trauma can influence how we how we think about ourselves and the world. We will also look at how childhood trauma can impact on the way we relate to others (attachment) and manage our emotions (the different behaviours used to manage difficult emotions). By looking at how these factors interact, we hope to increase the understanding of why and how mental health difficulties develop, which could help to contribute towards developing more effective treatments.

Participant Information Sheet Version 1, September 2016

Why have I been invited to take part?

We are inviting people to participate who are not currently, and have never received NHS mental health support. This will enable us to compare information collected from individuals receiving NHS support for Psychosis and Borderline Personality Disorder.

Our project aims to recruit a total of 120 individuals over an 18 months period. This will include 40 individuals who are not receiving NHS mental health support and 80 individuals who are receiving NHS mental health support, in which 40 participants present with Psychosis and 40 present with Borderline Personality Disorder

Do I have to take part? What happens if I change my mind?

No, taking part in this study is completely voluntary. If you do not wish to take part please tell the researcher. There will be no judgement or hard feelings from anyone. If you decide you would like to take part you are free to withdraw at any time and you do not have to give any reason.

What will I have to do if I take part?

The study involves completing a series of questionnaires on the internet. Therefore if you do decide to take part, you will need to have access to a device which can access the internet. You will be asked fill in a series of questions which will confirm that you understand the information in this leaflet and if you wish to continue, you will be asked to confirm that you consent to take part in the study.
The study will involve you completing a series of questionnaires online. The questionnaires will ask you about your current mental health, possible childhood trauma, thoughts you may currently have, views on close relationships, and your experience and management of emotions. The study questionnaires will be completed at your own pace and can be carried out in session or over a few sessions. Taking part will take no longer than two hours in total. The study will take place in where you are able to access the online questionnaires. When you have completed all questionnaires there is an opportunity to email the research team with any questions you may have about the study.

What are the possible disadvantages and risks of taking part?

All study questionnaires have been used on a large number of people in the UK and the world and it is key that people find them acceptable. Even so, the questions could cause someone to become upset. You do not have to answer questions you do not want to and you can stop filling in the questionnaires at any time.

If you are feeling very distressed as a result of taking part in the study we strongly advise you seek medical advice, such as visiting your General Practitioner (GP). If you feel that you are in immediate danger to yourself or others, please immediately attend the local hospital A&E department. Contact numbers for organisations you can contact for support will be provided to you after you have completed the questionnaires. You can request this information is also sent to you by email.

What are the possible benefits?

You may not benefit directly from taking part in the study. The results from this study will hopefully increase our understanding of how childhood trauma is linked to mental health difficulties later in life. Hopefully, this can contribute towards better care for individuals presenting with Borderline Personality Disorder and Psychosis.

What about expenses?

Although we cannot pay for your time, internet access or travel expenses, you will be invited to enter into a prize draw to receive one of four £20 amazon vouchers as a thank you for taking part in this research.

Will my taking part in the study be kept confidential?

All information collected about you during the course of the research will be kept strictly confidential and all identifiable information (your name and address) will be removed from the data. Throughout we will follow ethical and legal practice including upholding the Data Protection Act of 1998 regarding data collection, storage and destruction.

Your decision to participate and all the information collected in this study will not be exchanged with any other organisations or your GP.

What happens to my information after the study is completed?

You have the right to withdraw your information collected in the study questionnaires any time before the data is analysed, which will be around December 2017. When the study is completed, the data from the study will be kept for 10 years after the last publication, in accordance with the University of East Anglia's policy on storage of personal data. The study will also comply with any specific guidance provided by your NHS trust. Consent forms will be retained as essential documents, but items such as contact details will be destroyed in accordance with appropriate policies as soon as they are no longer needed.

What will happen to the results of the research study?

The study will be written up as partial fulfilment of a Doctorate in Clinical Psychology at the University of East Anglia and is planned to be completed in 18 months. The research findings will be submitted to a relevant scientific journal and if you are interested, we will feed back the overall study results to you at the end of this time period.

What if there is a problem?

If you have concerns about any aspect of this study, you should ask to speak to the researcher who will do their best to answer your questions (see contact details below). If they are unable to resolve your concern or you wish to make a formal complaint, you can contact Programme Director Professor Kenneth Laidlaw on K.Laidlaw@uea.ac.uk.

In the event that something does go wrong and you are harmed during the study due to negligence, then you may have legal grounds for action against The University of East Anglia, who are the sponsors of this research, however, you may have to pay your legal costs.

The University of East Anglia has cover for no fault compensation for bodily injury, mental injury or death where the injury resulted from a trial or procedure you received as part of the trial. This would be subject to policy terms and conditions. Any payment would be without legal commitment. (Please ask if you want more information).

Who is organising and funding the research?

All study expenses come from a budget available via the Department of Clinical Psychology within the University of East Anglia.

Who has reviewed the study?

All NHS based studies are checked by an independent group of people called a Research Ethics Committee. The Research Ethics Committee is devoted to protect your safety, rights, wellbeing and dignity. The study protocol has been reviewed and given a favourable opinion from the NHS ethics committee (*reference no.*) and a research sub-committee from the Department of Clinical Psychology within the University of East Anglia (*reference no.*).

Contact for further information

If you would like further information about the study please contact:

Researchers: **Cat George & Desire Furnes**
Telephone: ***Study mobile number(s) inserted here***
Email: **study email inserted here@nhs.net**

Thank you for considering taking part in this research.

Please take the time to carefully consider the information given and discuss with your family and friends if you wish.

Appendix E1. Team presentation template

University of East Anglia

Exploring the Impact of Trauma & Developmental Factors in Individuals with Mental Health Difficulties

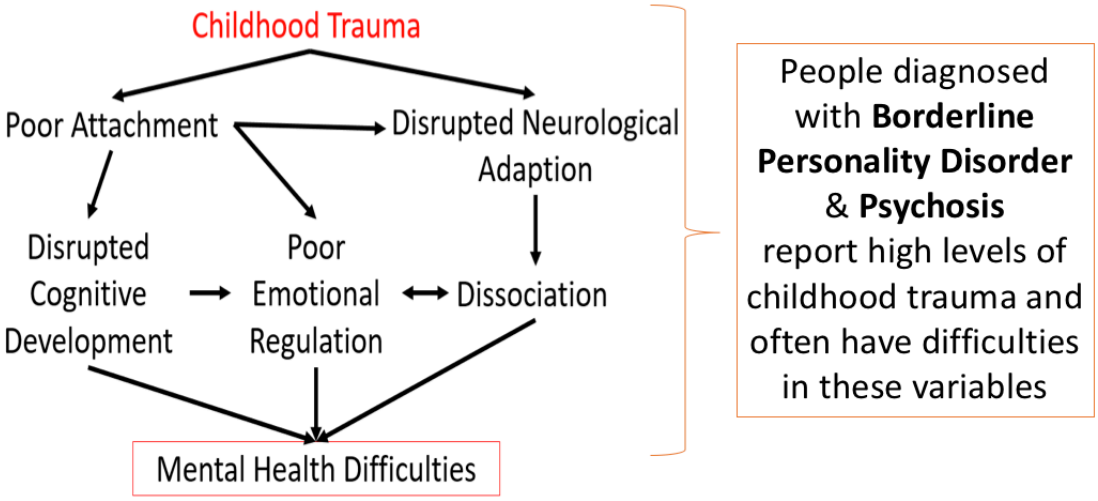
Cat George & Desire Furnes (Trainee Clinical Psychologists)

Supervisors: Dr Joanne Hodgekins & Dr Sian Coker
Key Collaborators: Dr Deidre Williams, Dr Michelle Painter & Dr Liam Gilligan

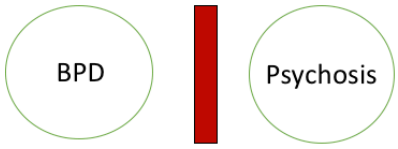
Clinical Experience

Key themes

Childhood trauma is linked to later **mental health difficulties.**



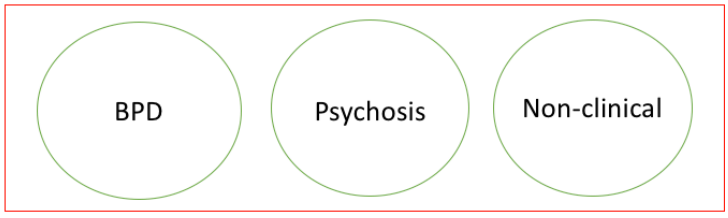
Despite the overlap in presentations…

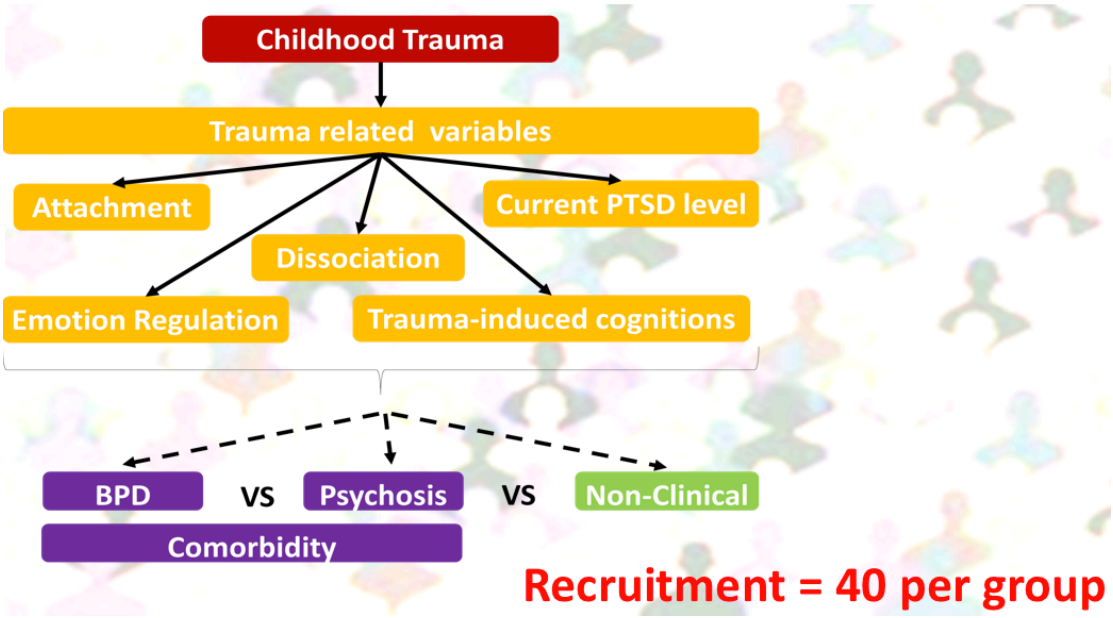


these population groups are generally studied in isolation….

Research Aim

To explore how people diagnosed with BPD and psychosis differ in type and severity of childhood trauma and in the trauma related variables, and how do they differ from a non-clinical group.



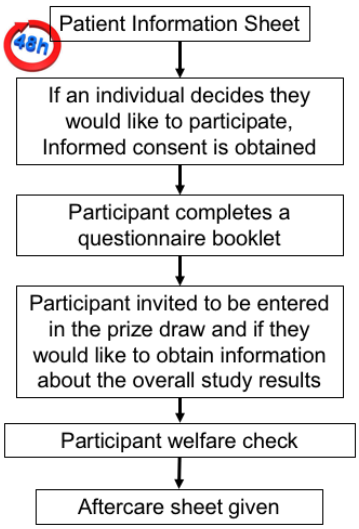


	YES	NO
Under the care of mental health NHS teams.		
Age 18-65 years, inclusive		
Fluent in written and spoken English language		
Criteria met for Borderline Personality Disorder *and* no secondary diagnosis of a Psychotic Disorder **OR** criteria met for a Psychotic Disorder *and* no secondary diagnosis of Borderline Personality Disorder as assessed by the clinical team.		
Ability to understand and willing to give written informed consent		
No cognitive or language difficulties that prevent providing informed consent or compromise participation in completing study questionnaires		
No current serious suicidal or violence risk		
Substance use that is considered severe enough to impact on a person's ability to give informed consent and participate in the study		


Norfolk and Suffolk NHS
NHS Foundation Trust
Cambridgeshire and Peterborough NHS
NHS Foundation Trust
King's Lynn
The Queen Elizabeth Hospital
Norwich
Norfolk & Norwich University Hospital
Norfolk and Suffolk NHS FT
Great Yarmouth
James Paget University Hospitals
Peterborough
Peterborough and Stamford Hospitals
Huntingdon
Hinchingbrooke Healthcare
Papworth Everard
Papworth Hospital
Cambridge
Cambridge University Hospitals
Cambridgeshire and Peterborough NHS FT
Bury St Edmunds
West Suffolk Hospital
Ipswich
Ipswich Hospital
Norfolk and Suffolk NHS FT
We do home visits
NHS


UEA
Participant Information Sheet
Exploring the impact of trauma and developmental factors in individuals with mental health difficulties


UEA
Exploring the impact of trauma and developmental factors in individuals with mental health difficulties


Patient Information Sheet
48h
If an individual decides they would like to participate, Informed consent is obtained
Participant completes a questionnaire booklet
Participant invited to be entered in the prize draw and if they would like to obtain information about the overall study results
Participant welfare check
Aftercare sheet given


UEA
Participant Consent Form


UEA
After Care Information - Looking After Yourself

The Questionnaire Booklet

1 hour 10 mins

Demographic Information Sheet

Early Trauma Inventory Self Report – Short Form (Bremner, Bolus & Mayer, 2007).

Psychosis Attachment Measure (Berry et al., 2006)

6-Item Post Traumatic Stress Disorder Checklist – Civilian Form (Weathers et al., 1994).

Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004)

Dissociative Experience Scale-II (Carlson & Putnam, 1993).

Post-Traumatic Cognitions Inventory (Foa et al., 1999).

The Brief Scizotypal Symptoms Inventory (Hodgekins et al., 2012).

Abbreviated Borderline Symptom List (Bohus et al., 2009).

Unfortunatly we cannot pay for time or travel expenses. Participants will be invited to enter into a prize draw to receive **one of four £20 amazon vouchers** as a thank you for taking part

We can visit people at home or organise appointments at a clinic (e.g. before a routine clinic appointment)

The findings will be published and made available to all participants, clinicians and local services involved.

The findings of this study will contribute to:

- Enhanced understanding of how childhood trauma impacts on psychobiological functioning in adulthood
- A better understanding of how people develop distinct mental health problems in response to trauma
- Improved understanding of comorbidities between BPD and Psychosis
- Hopefully improve the way we help people to recover from mental health difficulties

Thank you for listening

Appendix E2. Clinician Information Sheet

Clinician Letter

Version 1, September 2016

Insert local address here

Insert clinician address here

Dear [Insert Clinician Name],

We would like to let you know about our research study (outlined below) that may be of interest to you and your clients. I would kindly ask you to consider referring clients for possible participation if they fulfil criteria below.

Exploring the impact of trauma and developmental factors in individuals with mental health difficulties

The study aims to get a better understanding of how childhood trauma, trauma-induced cognitions, dissociation, attachment styles and emotion management differ between individuals with BPD and psychosis, and how the groups differ from non-clinical individuals. By exploring how these factors interact we hope to increase the understanding of how trauma influence the development of psychopathology, which will hopefully contribute towards the development of more individualised and more effective treatment.

The eligibility criteria for this study is:

- 18-65 years and fluent in English language
- Borderline Personality Disorder as a primary diagnosis *and* no secondary diagnosis of a Psychotic disorder *OR* Psychotic disorder as a primary diagnosis *and* no secondary diagnosis of Borderline Personality Disorder
- Ability to understand and willing to give written informed consent
- No current difficulties that compromise completion of the study questionnaires
- No current serious suicidal or violence risk
- Substance use that is considered severe enough to impact on a person's ability to give informed consent and participate in the study

We look forward to speak with clients in your service who may be interested in participating in this study. Please feel free to contact us if you have any questions or if you would like us to organise a presentation to your team. We can contact clients directly if they have given you permission for us to do so, or patients can contact us directly using the contact information provided below.

Researchers: Cat George & Desire Furnes
Telephone: *Study mobile number(s) inserted here*
Email: study email inserted here@nhs.net

Thank you for your time and consideration.

Yours Sincerely,
Cat George & Desire Furnes
Trainee Clinical Psychologists, University of East Anglia

Appendix E3. Clinician Information Letter

Version 1, September 2016

Exploring the impact of trauma and developmental factors in individuals with mental health difficulties

Template for informing clinician / care team after a client has consented and participated in study

Dear *XXXX*,

I am writing to you to inform you that your client, *XXXX* [*insert NHS number*], has consented *and taken part* in the research study: 'Exploring the impact of trauma and developmental factors in individuals with mental difficulties'.

The research team has uploaded the relevant consent form and Participant Information Sheet to their NHS care records. The research team has written an entry into their clinical notes documenting their involvement.

If you have any queries about this study or your clients participation please do not hesitate to get in contact with the research team.

Best wishes,

XXXXX

Insert Research Team contact details here

Appendix F1. Eligibility and Diagnostic Checklist – clinical groups

University of East Anglia

Exploring the impact of trauma and developmental factors in individuals with mental health difficulties

Eligibility and Diagnostic Checklist

To be completed with guidance from care team and/or clinical records.

Name of researcher/ lead health care professional: _____

Service User Trust Non Identifiable Number: _____

	YES	NO
Under the care of mental health NHS teams.		
Age 18-65 years, inclusive		
Fluent in written and spoken English language		
Criteria met for Borderline Personality Disorder *and* no secondary diagnosis of a Psychotic Disorder **OR** criteria met for a Psychotic Disorder *and* no secondary diagnosis of Borderline Personality Disorder as assessed by the clinical team.		
Ability to understand and willing to give written informed consent		
No cognitive or language difficulties that prevent providing informed consent or compromise participation in completing study questionnaires		
No current serious suicidal or violence risk		
Substance use that is considered severe enough to impact on a person's ability to give informed consent and participate in the study		

I confirm that they meet the above criteria for inclusion to this study.

Name: _____

Signature: _____ **Date:** ___/___/_____

Appendix F2. Eligibility and Diagnostic Checklist – non-clinical group (online version)

Eligibility and Diagnostic Checklist Version 1, September 2016

University of East Anglia

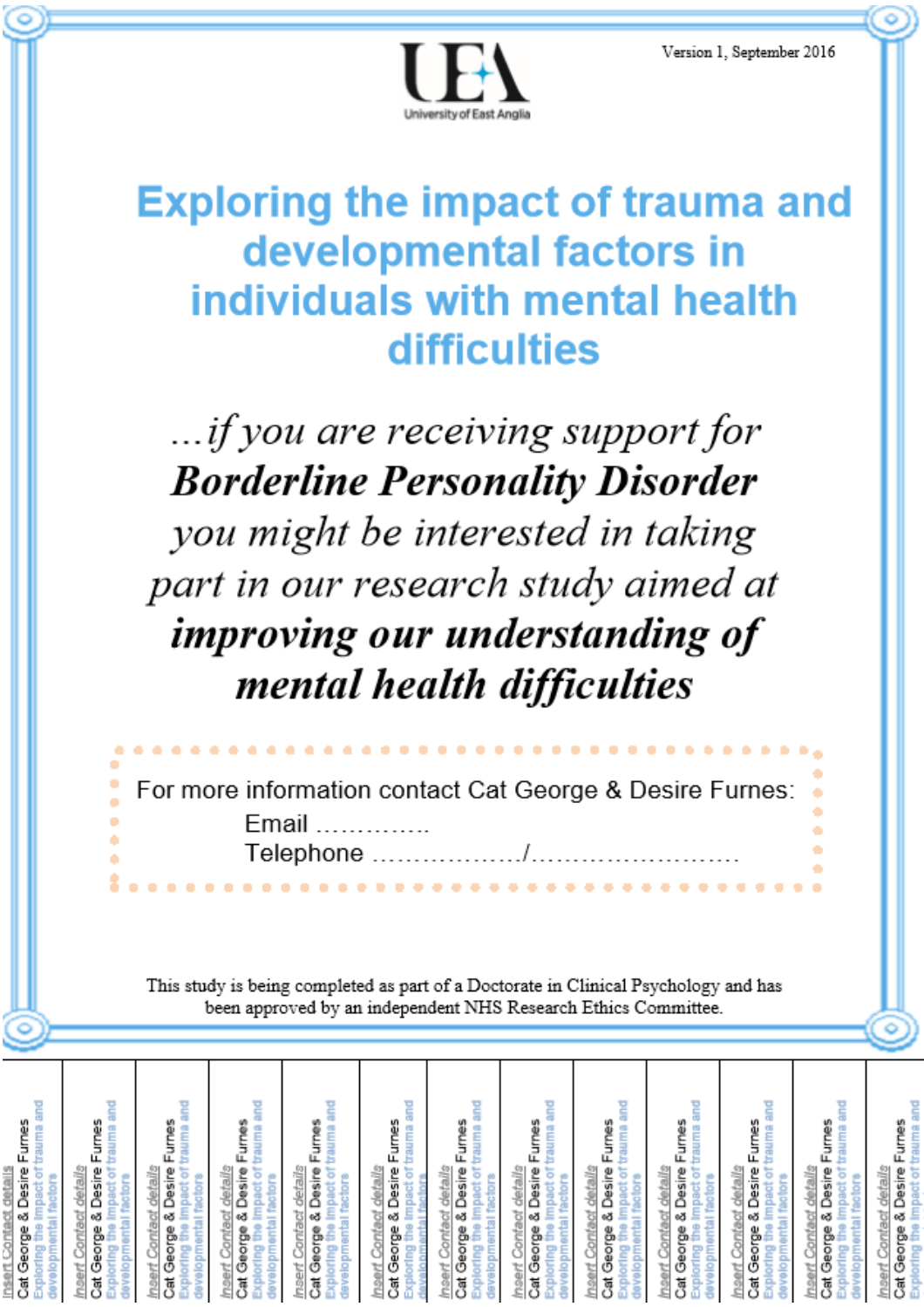
Exploring the impact of trauma and developmental factors in individuals with mental health difficulties

Eligibility and Diagnostic Checklist – Online Template

To be completed online by the potential participant before being able to take part in the online survey.

Question in the screening survey	**Response Option**	
Are you currently or have you ever been under the care of mental health NHS teams?	YES	NO
Are you aged between 18 and 65 years?	YES	NO
Are you fluent in written and spoken English language?	YES	NO
Have you ever been diagnosed with a mental health disorder?	YES	NO
Do you currently have any thoughts or plans about hurting yourself or ending your life?	YES	NO

Appendix G1. Poster – Borderline Personality Disorder



University of East Anglia

Version 1, September 2016

Exploring the impact of trauma and developmental factors in individuals with mental health difficulties

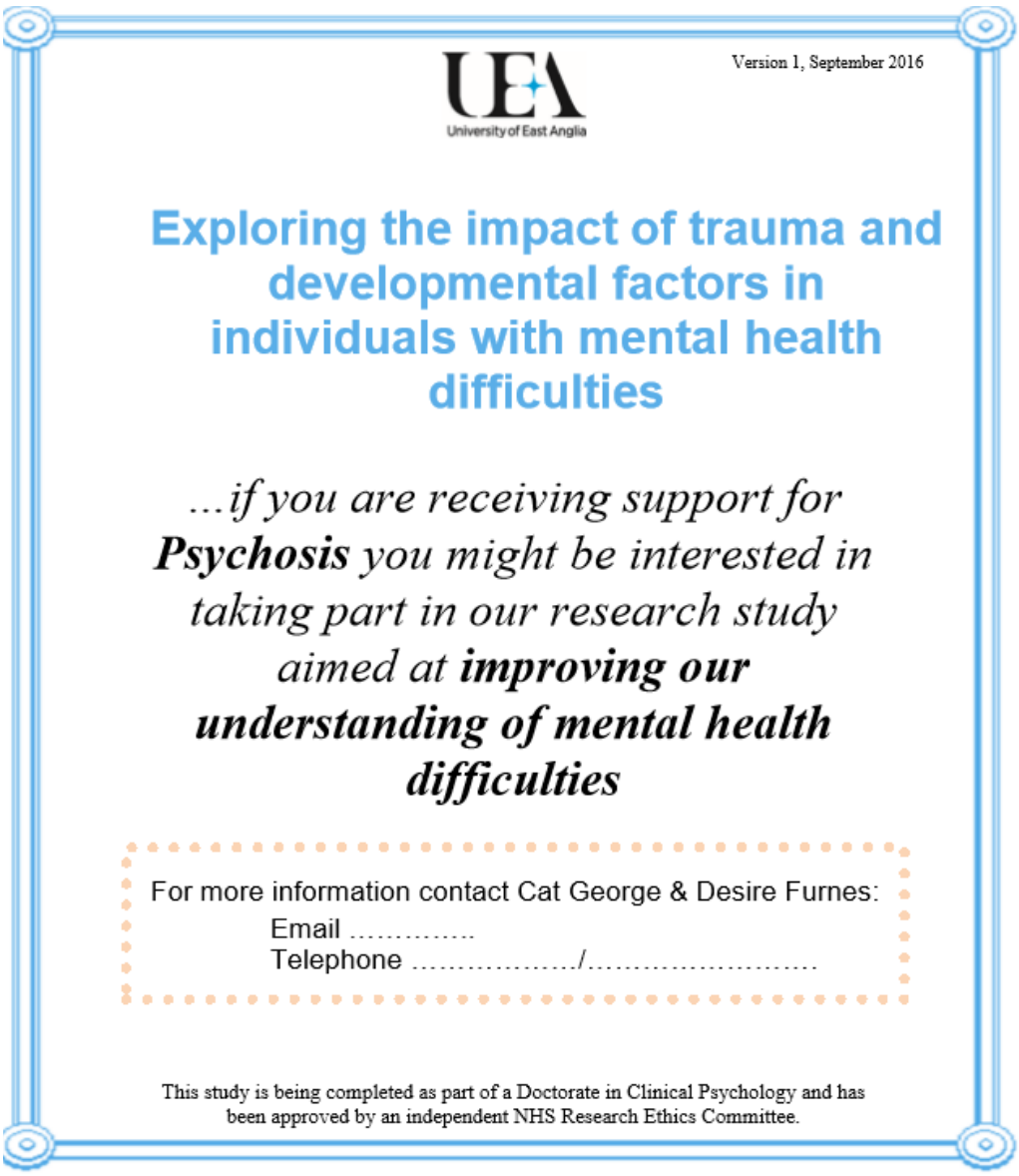
...if you are receiving support for ***Borderline Personality Disorder*** *you might be interested in taking part in our research study aimed at* ***improving our understanding of mental health difficulties***

For more information contact Cat George & Desire Furnes:
Email .....
Telephone ...../.....

This study is being completed as part of a Doctorate in Clinical Psychology and has been approved by an independent NHS Research Ethics Committee.

Insert Contact details
Cat George & Desire Furnes
Exploring the impact of trauma and developmental factors

Appendix G2. Poster – Psychosis



University of East Anglia

Version 1, September 2016

Exploring the impact of trauma and developmental factors in individuals with mental health difficulties

...if you are receiving support for ***Psychosis*** *you might be interested in taking part in our research study aimed at* ***improving our understanding of mental health difficulties***

For more information contact Cat George & Desire Furnes:

Email .....

Telephone ...../.....

This study is being completed as part of a Doctorate in Clinical Psychology and has been approved by an independent NHS Research Ethics Committee.

Insert Contact details
Cat George & Desire Furnes
Exploring the impact of trauma and developmental factors

Appendix H1. Telephone guidance protocol

Telephone Self-Referral Version 1, February 2017

Exploring the impact of trauma and developmental factors in individuals with mental health difficulties

Telephone Self-Referral – Guidance for Researcher

General telephone manner: Polite, open and friendly

Record contact with any potential participant using the Screening and Enrolment Log.

IMPORTANT: Consent to contact must be obtained prior to contacting a potential participant. Participants are unable to give informed consent via the telephone.

1. **Introduce yourself and your role in the study**

"Hello, my name is _____ and I am one of the researchers for the study 'Exploring the impact of trauma and developmental factors in individuals with mental health difficulties', which looks at the impact of trauma, attachment, dissociation and management of emotions in different groups. Thank you for contacting us/letting us contact you in relation to this study".

2. **Ask how they heard about the study** (to gauge if they have discussed this with their clinical team or if they are self-referring)

"How did you hear about this study?" Clinical: poster or clinician

3. **Check their current understanding of the study and ask if they have received the Patient Information Sheet?**

Ask if they have been given or spoken to anyone about the Participation Information Sheet?

If they have already been given the Participation Information Sheet enquire when and how they obtained this. Ask if they have any questions about the study.

If they have not been given the Participation Information Sheet, ask if they would like to obtain this and check what their preferred method of receiving this would be.

If a participant would like to discuss the Participation Information Sheet or ask questions about the study in person then a study appointment with a researcher will be offered.

4. **Ask if they would like to know more information about the study now?**

"I would be happy to provide you with more information about the study or answer any questions you might have"

If **YES**: some have only seen poster information while some have been given the Participant Information Sheet: in both instances, the information in the Participant Information Sheet will be used as a guide to outline the study

If **NO**: *"Thank you very much for talking to me. Feel free to contact me at a later point should you want to hear more about the study"*

5. **Check if they have any questions regarding the information they have just received**

Participant Information Sheet will be used as a guide to answer all possible questions and, should Participant Information Sheet not contain answers for the questions asked, local Trust policies will be used to inform answers.

If unable to answer the question: *"I am sorry that I am not able to answer your question right now. I will investigate this and call you back when I have a clear answer, is that okay? Thank you for your understanding".*

6. **Ask if they would be interested in taking part**

If **No**: *"That is completely fine, thank you very much for talking to me"*

If **YES**: *"Thank you for your interest".*

IMPORTANT: Informed consent cannot be taken over the phone. Informed consent can only be obtained in person after a potential participant has received and read the Participant Information Sheet. Potential participants have must have received the Participant Information Sheet a minimum of 48 hours before they are able to consent and take part in the study.

7. **Explain that it is important to check if they would be suitable to take part and in order to do this we have a few questions – obtain verbal consent to ask some general questions**

If Eligibility and Diagnostic Checklist is not completed in collaboration with clinician before initial contact with client (for clinical referrals): *"We have to make sure that everyone that is interested in a study appointment fit the criteria set for the study. Is it okay that I ask you some general questions?"*

If **NO**: *"That is completely fine, thank you very much for talking the time to talk to me"*

If **YES**: complete the appropriate Eligibility and Diagnostic Checklist by reading up each statement to the respondent and ask them to respond with YES or NO answers. Ask for permission to contact clinician/care team involved in their care.

If **NO**: *"Alright, it is completely understandable that you do not want us to contact your clinician/care team. However, one of the criteria for participation when under the care of NHS is that clinicians/care teams are informed of your interest to participate in the study and check whether they think it is suitable for you to participate before we book in a study appointment. Could I ask you why you don't want them to be contacted? Would it help if I explained the reasons why clinicians/care teams are involved?"*

If **YES**: *"Thank you, involving clinician/care teams is required for everyone under the care of NHS. I will make contact with your clinician/care team and once I have spoken with them I will contact you again".*

8. **For all respondents: explain the outcome of the questions to the individual and check if they have any questions relating to this or the study in general.**

If not eligible: *"Thank you for your time and for considering participating. Unfortunately you are not eligible to take part in this research because you do not meet the criteria set for this study. This is because research studies in general have specific things that they are looking for, which will be different from study to study. For this specific study, we are looking for* (state criteria they do not meet) *which means that this study would not be appropriate for you to participate in. This does not affect your care in any way and will not stop you from participating in other research studies as they all have different criteria. Do you have any questions regarding this? Thank you for your time and interest".*

Telephone Self-Referral Version 1, February 2017

If eligible: *"Thank you for time and for considering participating. You have been found eligible to participate in this study, would you like further details of what happens on the study appointment?"*

If **YES**: *"The next step now is to set a time and location for us to meet. When we meet for the appointment you will be provided with a questionnaire booklet. Since this study will include questions that might be distressing for some people, such as traumatic childhood events, it is important to inform you of this now. I will be present during the time you fill in the booklet. Should you experience any distress during or after completing the questionnaire, we can talk about this and your clinician/care team will be informed. Also, you can withdraw at any time without any explanation and this will not affect in you negatively in any way or influence your treatment or support. I will also provide you with an aftercare sheet that includes guidance on who you can contact should you feel distressed after leaving the appointment. Do you have any questions?*

Appendix H2. Screening and Enrolment Log

Exploring the impact of trauma and developmental factors in individuals with mental health difficulties

Screening and Enrolment Log

Study non-identifiable ID	Method of Contact	Date of Contact (xx/xx/xx)	Consent to contact Date (xx/xx/xx)	Method of receiving PIS	Date PIS given (xx/xx/xx)	Eligibility criteria met (YES / NO)	Informed Consent (xx/xx/xx)	Notes If refused or excluded, please give details

Appendix H3. Trust-adjusted Checklist

NSFT	**Completed**
Eligibility and diagnostic checklist	
Verbal consent to contact documented (via clinician OR via email with clinician) CONSENT TO CONTACT DATE: _____ CONSENT TO CONTACT via: _____	
Documentation of all contact (to later be uploaded to client records OR sent to clinician to upload)	
Information about self-referral/ _____	
PIS sent / PIS visit – Document date and method of how this was done DATE:_____ _____ METHOD:_____ _____	
Speak about confidentiality – break confidentiality if current risks to self or others is disclosed	
Informed written consent: (Two versions to be completed) DATE:_____ TIME: _____ METHOD:_____ RESEARCHER: _____	

OTHER PEOPLE PRESENT _____ QUESTIONS ASKED _____	
Questionnaire pack completion RISK ISSUES: _____	
CHECK QUESTIONS ARE ALL ANSWERED	
CHECK RISK QUESTIONS IN QUESTIONNAIRE (Check responses to the BSL-23 supplement items – if indicating risk, ask if their care team is aware of these incidents and ask for verbal consent to pass this information to the care team. If they respond no, remind them of breaks of confidentiality as discussed previously)	
CONSENT TO SHARE INFORMATION WITH CARE TEAM? (i.e. ask whether the participant want to share specific information provided in the booklet or whether clinicians can have access to a copy of the whole questionnaire booklet)	
PRIZE DRAW & PUBLICATION SHEET	
AFTER CARE SHEET Ensure correct contact number is on this!	
COMPLETION TIME _____	
Questionnaire pack labelling - Date	

- Participant ID number - Page number *Make sure demographic sheet has these details on it at the top*	
Filing - Consent form into specific location on NSFT site (locked draw) - Prize draw sheet into specific location on NSFT site (locked draw) - Questionnaire pack stored in NSFT or relocated to site file / another specific location.	
Lorenzo - Document any prior contact which has not been uploaded or documented yet (follow guidance in clinical note template) - Document current contact (follow guidance in clinical note template) - Upload consent form - Upload PIS - Flag involvement in research on Lorenzo following guidance from: http://intranet.nsft.nhs.uk/trustprogramme/lorenzo/Lorenzo%20Documents/QRG%20-%20Alerts%20-%20Record%20and%20Modifying%20Alerts%20V3.0.pdf - Inform clinician of participation using Clinician Information Letter and inform of any risk issues	
Complete screening and enrolment log (for everyone that have been seen by the research team)	

Appendix I. Risk Management Protocol

Exploring the impact of trauma and developmental factors in individuals with mental health difficulties

Risk Management Protocol – Clinical Groups

- Risk assessment will be completed throughout study-related contact. If participants experience any distress during or after participation, local NHS procedures will be followed and advice from care teams and supervisors will be sought immediately.
- Participants, clinicians and care teams will be informed of the content of the questionnaire booklet and potential distress by sensitive questions will be emphasised prior to participation.
- The Eligibility and Diagnostic Checklist (Version 1, September 2016) will be completed for each participant prior to ensure that only participants deemed eligible are offered study appointments.
- Study appointments will be scheduled at suitable NHS locations and preferably prior to routine care appointments. Home visits will only be offered to clients that presents with low risk and in agreement with the client's care team.

If risk is revealed during or after study participation

- Study participation will be stopped immediately and a thorough risk assessment will be conducted.
- Appropriate action will then be taken depending on the outcome of the risk assessment and will be considered on a case-by-case basis.
- If the participant remains distressed, relevant care teams and supervisors will be approached for advice and involved immediately to ensure safety.
- All participants will be provided with aftercare sheets, which give participants clear guidance on how to proceed should they need support.

Risk Management Protocol – NonClinical

- As the non-clinical group is recruited online, risk will only be assessed during the initial phase when completing the Eligibility and Diagnostic Checklist; participants that answers YES to the question "Are you currently or have you ever been under the care of a mental health NHS team?" will be deemed ineligible for participation. Further, if participants answers YES to the question "Do you currently have any thoughts or plans about hurting yourself

of ending your life?", they will be excluded from participating in the study and redirected to a page providing aftercare information and signposting them to relevant services.

- Participants can chose to withdraw at any point by closing down the online study site.

- After participants complete the questionnaires they will be provided with signposting information and aftercare information that they can choose to email to themselves. Participants will be strongly encouraged to make contact with health care professionals should they need support.

Appendix J1. Consent form – clinical groups

Centre Number ____ Study Number ____ Version 1, February, 2017

Patient Identification Number _____

University of East Anglia

Exploring the impact of trauma and developmental factors in individuals with mental health difficulties

Participant Consent Form

Researchers: Cat George and Desire Furnes

Please initial box

1. I confirm that I have read and understand the Participation Information Sheet dated .../.../... (Version...) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐
2. I understand my participation is entirely voluntary and that I am free to withdraw at any time without giving any reason and without my medical care or legal rights being affected in any way. I understand that if I choose to withdraw my consent after the data has been analysed it will not be possible to remove my data from the study. ☐
3. I understand that the relevant sections of my medical notes may be looked at by the study researchers and individuals from the Sponsor, regulatory authorities or from the NHS organisations, where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records. ☐
4. I agree to take part in the above study ☐

_____	_____	_____
Name of Participant	Date	Signature
_____	_____	_____
Name of Person taking consent	Date	Signature

When completed: 1 for participant; 1 for researcher site file; 1 (original) kept in medical notes.

Appendix J2 – Consent form – non-clinical group (online version)

Online Consent Version 1, February 2017

Exploring the impact of trauma and developmental factors in individuals with mental health difficulties

Online Participation Consent Form Template

Insert PIS here

1. I have read and understand the Participant Information Sheet (Version X, Date XX) from *insert website address.com* for this study. I have had the opportunity to consider the information and know I can contact the researcher to ask questions.
    a. Yes
    b. No
2. I understand my participation is entirely voluntary and that I am free to withdraw at any time without giving any reason and without my medical care or legal rights being affected in any way. I understand that I can withdraw my data from the study by emailing the researcher with my unique code. I understand that if I choose to withdraw my consent after the data has been analysed it will not be possible to remove my data from the study.
    a. Yes
    b. No
3. I am not currently and have never received mental health care treatment
    a. Yes
    b. No
4. I agree to take part in this study
    a. Yes
    b. No

Appendix K. Demographic Information Sheet

Exploring the impact of trauma and developmental factors in individuals with mental health difficulties

DEMOGRAPHIC INFORMATION SHEET

Age _____ years

Gender ☐ Male ☐ Female

Ethnicity ☐ White British ☐ Asian British ☐ Black British

Other, please specify_____

Level of education

☐ Primary School ☐ Secondary School ☐ College

☐ Undergraduate ☐ Masters ☐ PhD/Doctoral

Other, please specify_____

Employment status

☐ Employed ☐ Unemployed ☐ Student

Other, please specify_____

Marital status

☐ Married ☐ Separated ☐ Divorced

☐ Widowed ☐ Single ☐ Living with partner

Other, please specify_____

Demographic Information Sheet Version 1, September 2016

Are you currently experiencing any mental health difficulty?

☐ YES ☐ NO

If YES, please specify_____

Are you receiving or have you ever received care for mental health difficulties?

☐ YES ☐ NO

If YES, please specify_____

Appendix L1. Early Trauma Inventory Self Report – Short Form (ETISR-SF)

Early Trauma Inventory Self Report-Short Form (ETISR-SF)

J. Douglas Bremner, Emory University School of Medicine, Atlanta GA

Participant Name or ID:_____ DOB:_____ Age:____ Assessment Date:_____

Part 1. General Traumas. <u>After the age of 18</u>

1. Were you ever exposed to a life-threatening natural disaster?	YES	NO
2. Were you involved in a serious accident?	YES	NO
3. Did you ever suffer a serious personal injury or illness?	YES	NO
4. Did you ever experience the death or serious illness of a parent or a primary caretaker?	YES	NO
5. Did you experience the divorce or separation of your parents?	YES	NO
6. Did you experience the death or serious injury of a sibling?	YES	NO
7. Did you ever experience the death or serious injury of a friend?	YES	NO
8. Did you ever witness violence towards others, including family members?	YES	NO
9. Did anyone in your family ever suffer from mental or psychiatric illness or have a "breakdown"?	YES	NO
10. Did your parents or primary caretaker have a problem with alcoholism or drug or drug abuse?	YES	NO
11. Did you ever see someone murdered?	YES	NO

Part 2. Physical Punishment. <u>Before the age of 18</u>

1. Were you ever slapped in the face with an open hand?	YES	NO
2. Were you ever burned with hot water, a cigarette or something else?	YES	NO
3. Were you ever punched or kicked?	YES	NO
4. Were you ever hit with an object that was thrown at you?	YES	NO
5. Were you ever pushed or shoved?	YES	NO

Part 3. Emotional Abuse. <u>Before the age of 18</u>

1. Were you often put down or ridiculed?	YES	NO
2. Were you often ignored or made to feel that you didn't count?	YES	NO
3. Were you often told you were no good?	YES	NO
4. Most of the time were you treated in a cold, uncaring way or made to feel like you were not loved?	YES	NO
5. Did your parents or caretakers often fail to understand you or your needs?	YES	NO

Part 4. Sexual Events. <u>Before the age of 18</u>

1. Were you ever touched in an intimate or private part of your body (e.g breast, thighs, genitals) in a way that surprised you or made you feel uncomfortable?	YES	NO
2. Did you ever experience someone rubbing their genitals against you?	YES	NO
3. Were you ever forced or coerced to touch another person in an intimate or private part of their body?	YES	NO
4. Did anyone ever have genital sex with you against your will?	YES	NO
5. Were you ever forced or coerced to perform oral sex on someone against your will?.	YES	NO
6. Were you ever forced or coerced to kiss someone in a sexual rather than an affectionate way?	YES	NO

If you responded "YES" for any of the above events, answer the following for the one that has had the greatest impact on your life. In answering consider how you felt <u>at the time of the event</u>.

1. Did you experience emotions of intense fear, horror or helplessness?	YES	NO
2. Did you feel out-of-your-body or as if you were in a dream?	YES	NO

Revised on 11/04

Appendix L2. Post Traumatic Stress Disorder Checklist – Civilian Form (PCL-C)

6- Item PTSD Checklist-Civilian Form (PCL-C)

Instructions to patient: "Below is a list of problems and complaints that people sometimes have in response to stressful life experiences. Please read each one carefully, and then fill in the circle of the response to indicate how much you have been bothered by that problem **IN THE PAST MONTH**." Please fill in ONE option only for each question."

	Response	Not at all (1)	A little bit (2)	Moderately (3)	Quite a bit (4)	Extremely (5)
1.	Repeated, disturbing *memories, thoughts,* or *images* of a stressful experience from the past?					
4.	Feeling *very upset* when *something reminded* you of a stressful experience from the past?					
7.	Avoid *activities* or *situations* because *they remind you* of a stressful experience from the past?					
10.	Feeling *distant* or *cut off* from other people?					
14.	Feeling *irritable* or having *angry outbursts*?					
15.	Having *difficulty concentrating*?					

Total Score

Appendix L3. The Psychosis Attachment Measure (PAM)

We all differ in how we relate to other people. This questionnaire lists different thoughts, feelings and ways of behaving in relationships with others. Thinking generally about how you relate to other key people in your life, please use a tick to show how much each statement is like you. Key people could include family members, friends, partner or mental health workers.

There are no right or wrong answers

	Not at all	**A little**	**Quite a bit**	**Very much**
1. I prefer not to let other people know my 'true' thoughts and feelings.	(.0.)	(.1.)	(.2.)	(.3.)
2. I find it easy to depend on other people for support with problems or difficult situations.	(.3.)	(.2.)	(.1.)	(.0.)
3. I tend to get upset, anxious or angry if other people are not there when I need them.	(.0.)	(.1.)	(.2.)	(.3.)
4. I usually discuss my problems and concerns with other people.	(.3.)	(.2.)	(.1.)	(.0.)
5. I worry that key people in my life won't be around in the future.	(.0.)	(.1.)	(.2.)	(.3.)
6. I ask other people to reassure me that they care about me.	(.0.)	(.1.)	(2.)	(.3.)
7. If other people disapprove of something I do, I get very upset.	(.0.)	(.1.)	(.2.)	(.3.)
8. I find it difficult to accept help from other people when I have problems or difficulties.	(.0.)	(.1.)	(.2.)	(.3.)
9. It helps to turn to other people when I'm stressed.	(.3.)	(.2.)	(.1.)	(.0.)

	Not at all	**A little**	**Quite a bit**	**Very much**
10. I worry that if other people get to know me better, they won't like me.	(.0.)	(.1.)	(.2.)	(.3.)
11. When I'm feeling stressed, I prefer being on my own to being in the company of other people.	(.0.)	(.1.)	(.2.)	(.3.)
12. I worry a lot about my relationships with other people.	(.0.)	(.1.)	(.2.)	(.3.)
13. I try to cope with stressful situations on my own.	(.0.)	(.1.)	(.2.)	(.3.)
14. I worry that if I displease other people, they won't want to know me anymore.	(.0.)	(.1.)	(.2.)	(.3.)
15. I worry about having to cope with problems and difficult situations on my own.	(.0.)	(.1.)	(.2.)	(.3.)
16. I feel uncomfortable when other people want to get to know me better.	(.0.)	(.1.)	(.2.)	(.3.)

Appendix L4. Written confirmation for permission to use the Psychosis Attachment Measure

Cat George (MED)

From: Katherine Berry <Katherine.Berry@manchester.ac.uk>
Sent: 20 April 2016 11:47
To: Cat George (MED)
Subject: RE: DClin Thesis Project: Trauma, Attachment and Psychosis

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Cat

I am happy for you to use the PAM if you feel it is suitable. Trainees here normally measure trauma using the CTQ or THQ but the former has cost implications. We normally measure symptoms with the PSYRATS or PANSS although the latter requires training and is time consuming.

Best wishes Katherine

From: Cat George (MED) [C.George@uea.ac.uk]
Sent: 20 April 2016 11:32
To: Katherine Berry
Subject: DClin Thesis Project: Trauma, Attachment and Psychosis

Dear Dr Berry,

I am a 1st year DClin trainee at UEA and I am in the process of setting up my thesis project. I am planning on looking at attachment as a mediator on the association between trauma experiences and psychotic symptoms, in a community psychosis population. I am currently collaborating with Dr Michelle Painter and Dr Penny Chips in Cambridgeshire and they have recommended I contact you as the expert in this area - I have found your papers extremely useful. I would really appreciate some advice on the measures to use and what you would recommend are key things to control for.

Any thoughts on this would be much appreciated.

I look forward to hearing from you.

Best wishes,

Cat

Cat George
Trainee Clinical Psychologist
University of East Anglia
Faculty of Medicine and Health Sciences
c.george@uea.ac.uk

University of East Anglia

UK Top 15 (14th in the Times and Sunday Times Good University Guide 2015)
UK 6th for Student Experience (Times Higher Education Student Experience Survey 2014)

Appendix L5. Difficulties in Emotion Regulation Scale

Serenity Programme™ - serene.me.uk - Difficulties in Emotion Regulation Scale (DERS)

1	2	3	4	5
Almost never (0-10%)	Sometimes (11-35%)	About half the time (36-65%)	Most of the time (66-90%)	Almost always (91-100%)

Difficulties in Emotion Regulation Scale (DERS)

Identifier Date

Please indicate how often the following 36 statements apply to you by writing the appropriate number from the scale above (1 – 5) in the box alongside each item.

1	I am clear about my feelings (R)	☐
2	I pay attention to how I feel (R)	☐
3	I experience my emotions as overwhelming and out of control	☐
4	I have no idea how I am feeling	☐
5	I have difficulty making sense out of my feelings	☐
6	I am attentive to my feelings (R)	☐
7	I know exactly how I am feeling (R)	☐
8	I care about what I am feeling (R)	☐
9	I am confused about how I feel	☐
10	When I'm upset, I acknowledge my emotions (R)	☐
11	When I'm upset, I become angry with myself for feeling that way	☐
12	When I'm upset, I become embarrassed for feeling that way	☐

Serenity Programme™ - serene.me.uk - Difficulties in Emotion Regulation Scale (DERS)

1	2	3	4	5
Almost never (0-10%)	Sometimes (11-35%)	About half the time (36-65%)	Most of the time (66-90%)	Almost always (91-100%)

13	When I'm upset, I have difficulty getting work done	☐
14	When I'm upset, I become out of control	☐
15	When I'm upset, I believe that I will remain that way for a long time	☐
16	When I'm upset, I believe that I'll end up feeling very depressed	☐
17	When I'm upset, I believe that my feelings are valid and important (R)	☐
18	When I'm upset, I have difficulty focusing on other things	☐
19	When I'm upset, I feel out of control	☐
20	When I'm upset, I can still get things done (R)	☐
21	When I'm upset, I feel ashamed with myself for feeling that way	☐
22	When I'm upset, I know that I can find a way to eventually feel better (R)	☐
23	When I'm upset, I feel like I am weak	☐
24	When I'm upset, I feel like I can remain in control of my behaviours (R)	☐
25	When I'm upset, I feel guilty for feeling that way	☐
26	When I'm upset, I have difficulty concentrating	☐
27	When I'm upset, I have difficulty controlling my behaviours	☐

Serenity Programme™ - serene.me.uk - Difficulties in Emotion Regulation Scale (DERS)

1	2	3	4	5
Almost never (0-10%)	Sometimes (11-35%)	About half the time (36-65%)	Most of the time (66-90%)	Almost always (91-100%)

28	When I'm upset, I believe that there is nothing I can do to make myself feel better	☐
29	When I'm upset, I become irritated with myself for feeling that way	☐
30	When I'm upset, I start to feel very bad about myself	☐
31	When I'm upset, I believe that wallowing in it is all I can do	☐
32	When I'm upset, I lose control over my behaviours	☐
33	When I'm upset, I have difficulty thinking about anything else	☐
34	When I'm upset, I take time to figure out what I'm really feeling (R)	☐
35	When I'm upset, it takes me a long time to feel better	☐
36	When I'm upset, my emotions feel overwhelming	☐

Document Version: 1.1
Last Updated: 05 June 2013
Planned Review: 30 June 2018

Privacy - please note - this form does not transmit any information about you or your assessment scores If you wish to keep your results, you must print this document These results are intended as a guide to your health and are presented for educational purposes only They are not intended to be a clinical diagnosis If you are concerned in any way about your health, please consult with a qualified health professional.

Gratz, K.L. & Roemer, E. Multidimensional Assessment of Emotion Regulation and Dysregulation: Development, Factor Structure, and Initial Validation of the Difficulties in Emotion Regulation Scale. Journal of Psychopathology and Behavioral Assessment, 26: 1, pp. 41-54.

Serenity Programme™ - serene.me.uk - Difficulties in Emotion Regulation Scale (DERS)

1	2	3	4	5
Almost never (0-10%)	Sometimes (11-35%)	About half the time (36-65%)	Most of the time (66-90%)	Almost always (91-100%)

SCORING THE DERS

The DERS is a brief, 36-item self-report questionnaire designed to assess multiple aspects of emotional dysregulation. Reverse-scored items are numbered 1, 2, 6, 7, 8, 10, 17, 20, 22, 24 and 34. Higher scores suggest greater problems with emotion regulation. The measure yields a total score (SUM) as well as scores on six sub-scales:

1. Non-acceptance of emotional responses (NONACCEPT)
2. Difficulties engaging in goal directed behaviour (GOALS)
3. Impulse control difficulties (IMPULSE)
4. Lack of emotional awareness (AWARE)
5. Limited access to emotion regulation strategies (STRATEGIES)
6. Lack of emotional clarity (CLARITY)

1: Nonacceptance of Emotional Responses (NONACCEPT)

25) When I'm upset, I feel guilty for feeling that way
21) When I'm upset, I feel ashamed with myself for feeling that way
12) When I'm upset, I become embarrassed for feeling that way
11) When I'm upset, I become angry with myself for feeling that way
29) When I'm upset, I become irritated with myself for feeling that way
23) When I'm upset, I feel like I am weak

2: Difficulties Engaging in Goal-Directed (GOALS)

26) When I'm upset, I have difficulty concentrating
18) When I'm upset, I have difficulty focusing on other things
13) When I'm upset, I have difficulty getting work done
33) When I'm upset, I have difficulty thinking about anything else
20) When I'm upset, I can still get things done (R)

1	2	3	4	5
Almost never (0-10%)	Sometimes (11-35%)	About half the time (36-65%)	Most of the time (66-90%)	Almost always (91-100%)

3: Impulse Control Difficulties (IMPULSE)

32) When I'm upset, I lose control over my behaviours
27) When I'm upset, I have difficulty controlling my behaviours
14) When I'm upset, I become out of control
19) When I'm upset, I feel out of control
3) I experience my emotions as overwhelming and out of control
24) When I'm upset, I feel like I can remain in control of my behaviours (R)

4: Lack of Emotional Awareness (AWARE)

6) I am attentive to my feelings (R)
2) I pay attention to how I feel (R)
10) When I'm upset, I acknowledge my emotions (R)
17) When I'm upset, I believe that my feelings are valid and important (R)
8) I care about what I am feeling (R)
34) When I'm upset, I take time to figure out what I'm really feeling (R)

5: Limited Access to Emotion Regulation Strategies (STRATEGIES)

16) When I'm upset, I believe that I'll end up feeling very depressed
15) When I'm upset, I believe that I will remain that way for a long time
31) When I'm upset, I believe that wallowing in it is all I can do
35) When I'm upset, it takes me a long time to feel better
28) When I'm upset, I believe that there is nothing I can do to make myself feel better
22) When I'm upset, I know that I can find a way to eventually feel better (R)
36) When I'm upset, my emotions feel overwhelming
30) When I'm upset, I start to feel very bad about myself

6: Lack of Emotional Clarity (CLARITY)

5) I have difficulty making sense out of my feelings
4) I have no idea how I am feeling
9) I am confused about how I feel
7) I know exactly how I am feeling (R)
1) I am clear about my feelings (R)

Appendix L6. Dissociative Experience Scale-II

Dissociative Experiences Scale-II (DES-II)
Eve Bernstein Carlson, Ph.D. & Frank W. Putnam, M.D.

Directions: This questionnaire consists of twenty-eight questions about experiences that you may have in your daily life. We are interested in how often you have these experiences. It is important, however, that your answers show how often these experiences happen to you when you are not under the influence of alcohol or drugs. To answer the questions, please determine to what degree the experience described in the question applies to you, and circle the number to show what percentage of the time you have the experience.

For example: 0% 10 20 30 40 50 60 70 80 90 100%
(Never) (Always)

1. Some people have the experience of driving or riding in a car or bus or subway and suddenly realizing that they don't remember what has happened during all or part of the trip. Circle a number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

2. Some people find that sometimes they are listening to someone talk and they suddenly realize that they did not hear part or all of what was said. Circle the number to show what percentage of the time this happens to you. 0% 10 20 30 40 50 60 70 80 90 100%

3. Some people have the experience of finding themselves in a place and have no idea how they got there. Circle a number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

4. Some people have the experience of finding themselves dressed in clothes that they don't remember putting on. Circle the number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

5. Some people have the experience of finding new things among their belongings that they do not remember buying. Circle the number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

6. Some people sometimes find that they are approached by people that they do not know, who call them by another name or insist that they have met them before. Circle the number to show what percentage of the time this happens to you 0% 10 20 30 40 50 60 70 80 90 100%

7. Some people sometimes have the experience of feeling as though they are standing next to themselves or watching themselves do something and they actually see themselves as if they were looking at another person. Circle the number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

8. Some people are told that they sometimes do not recognize friends of family members. Circle the number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

9. Some people find that they have no memory for some important events in their lives (for example, a wedding or graduation). Circle the number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

10. Some people have the experience of being accused of lying when they do not think that they have lied. Circle the number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

11. Some people have the experience of looking in a mirror and not recognizing themselves. Circle the number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

12. Some people have the experience of feeling that other people, objects, and the world around them are not real. Circle the number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

13. Some people have the experience of feeling that their body does not seem to belong to them. Circle the number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

14. Some people have the experience of sometimes remembering a past event so vividly that they feel as if they were reliving that event. Circle the number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

15. Some people have the experience of not being sure whether things that they remember happening really did happen or whether they just dreamed them. Circle the number to show what percentage of the time this happens to you. 0% 10 20 30 40 50 60 70 80 90 100%

16. Some people have the experience of being in a familiar place but finding it strange and unfamiliar. Circle the number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

17. Some people find that when they are watching television or a movie they become so absorbed in the story that they are unaware of other events happening around them. Circle the number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

18. Some people find that they become so involved in a fantasy or daydream that it feels as though it were really happening to them. Circle the number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

19. Some people find that they sometimes are able to ignore pain. Circle the number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

20. Some people find that they sometimes sit staring off into space, thinking of nothing, and are not aware of the passage of time. Circle the number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

21. Some people sometimes find that when they are alone they talk out loud to themselves. Circle the number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

22. Some people find that in one situation they may act so differently compared with another situation that they feel almost as if they were two different people. Circle the number to show what percentage of the time this happens to you. 0% 10 20 30 40 50 60 70 80 90 100%

23. Some people sometimes find that in certain situations they are able to do things with amazing ease and spontaneity that would usually be difficult for them (for example, sports, work, social situations, etc.). Circle the number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

24. Some people sometimes find that they cannot remember whether they have done something or have just thought about doing that thing (for example, not knowing whether they have just mailed a letter or have just thought about mailing it). Circle the number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

25. Some people find evidence that they have done things that they do not remember doing. Circle the number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

26. Some people sometimes find writings, drawings, or notes among their belongings that they must have done but cannot remember doing. Circle the number to show what percentage of the time this happens to you. 0% 10 20 30 40 50 60 70 80 90 100%

27. Some people sometimes find that they hear voices inside their head that tell them to do things or comment on things that they are doing. Circle the number to show what percentage of the time this happens to you. 0% 10 20 30 40 50 60 70 80 90 100%

28. Some people sometimes feel as if they are looking at the world through a fog, so that people and objects appear far away or unclear. Circle the number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

Appendix L7. Post-traumatic Cognitions Inventory

posttraumatic cognitions inventory (pcti)

your name: *today's date:*

We are interested in the kind of thoughts which you may have had after a traumatic experience. Below are a number of statements that may or may not be representative of your thinking. Please read each statement carefully and tell us how much you AGREE or DISAGREE with each by putting the appropriate number between 1 & 7 in the box to the right of the statement. People react to traumatic events in many different ways. There are no right or wrong answers to these statements.

1	2	3	4	5	6	7
totally disagree	disagree very much	disagree slightly	neutral	agree slightly	agree very much	totally agree

1.	the event happened because of the way I acted	
2.	I can't trust that I will do the right thing	
3.	I am a weak person	
4.	I will not be able to control my anger and will do something terrible	
5.	I can't deal with even the slightest upset	
6.	I used to be a happy person but now I am always miserable.	
7.	people can't be trusted	
8.	I have to be on guard all the time	
9.	I feel dead inside	
10.	you can never know who will harm you	
11.	I have to be especially careful because you never know what can happen next	
12.	I am inadequate	
13.	if I think about the event, I will not be able to handle it	
14.	the event happened to me because of the sort of person I am	
15.	my reactions since the event mean that I am going crazy	
16.	I will never be able to feel normal emotions again	
17.	the world is a dangerous place	
18.	somebody else would have stopped the event from happening	
19.	I have permanently changed for the worse	
20.	I feel like an object, not like a person	
21.	somebody else would not have gotten into this situation	
22.	I can't rely on other people	
23.	I feel isolated and set apart from others	
24.	I have no future	
25.	I can't stop bad things from happening to me	
26.	people are not what they seem	
27.	my life has been destroyed by the trauma	
28.	there is something wrong with me as a person	
29.	my reactions since the event show that I am a lousy coper	
30.	there is something about me that made the event happen	
31.	I feel like I don't know myself anymore	
32.	I can't rely on myself	
33.	nothing good can happen to me anymore	

Appendix L8. The Brief Schizotypal Symptoms Inventory

SSI (Brief Version)

Please answer each item depending on how often (if at all) this experience has occurred over the **past 2 weeks**. Please answer all of the questions honestly, even if you are unsure of your answer.

1. I sometimes avoid going to places where there will be many people because I will get anxious.	*Not at all*	*Occasionally*	*Sometimes*	*Often*	*All of the time*
2. Do you believe in telepathy (mind-reading)?	*Not at all*	*Occasionally*	*Sometimes*	*Often*	*All of the time*
3. I am sure I am being talked about behind my back.	*Not at all*	*Occasionally*	*Sometimes*	*Often*	*All of the time*
4. I get very nervous when I have to make polite conversation.	*Not at all*	*Occasionally*	*Sometimes*	*Often*	*All of the time*
5. Have you had the sense that some person or force is around you, even though you cannot see anyone?	*Not at all*	*Occasionally*	*Sometimes*	*Often*	*All of the time*
6. Do you often feel that other people have got it in for you?	*Not at all*	*Occasionally*	*Sometimes*	*Often*	*All of the time*
7. I feel very uneasy talking to people I do not know well.	*Not at all*	*Occasionally*	*Sometimes*	*Often*	*All of the time*
8. Have you noticed a common event or object that seemed to contain a special sign for you?	*Not at all*	*Occasionally*	*Sometimes*	*Often*	*All of the time*
9. When you see people talking to each other, do you often wonder if they are talking about you?	*Not at all*	*Occasionally*	*Sometimes*	*Often*	*All of the time*
10. I often hear a voice speaking my thoughts aloud.	*Not at all*	*Occasionally*	*Sometimes*	*Often*	*All of the time*
11. Do you often feel nervous when you are in a group of unfamiliar people?	*Not at all*	*Occasionally*	*Sometimes*	*Often*	*All of the time*
12. I often feel that others have it in for me.	*Not at all*	*Occasionally*	*Sometimes*	*Often*	*All of the time*
13. Have you seen things invisible to other people?	*Not at all*	*Occasionally*	*Sometimes*	*Often*	*All of the time*

14. I feel very uncomfortable in social situations involving unfamiliar people.	*Not at all*	*Occasionally*	*Sometimes*	*Often*	*All of the time*
15. Do you sometimes feel that people are talking about you?	*Not at all*	*Occasionally*	*Sometimes*	*Often*	*All of the time*
16. Can other people feel your feelings when they are not there?	*Not at all*	*Occasionally*	*Sometimes*	*Often*	*All of the time*
17. I get anxious when meeting people for the first time.	*Not at all*	*Occasionally*	*Sometimes*	*Often*	*All of the time*
18. Do you believe in clairvoyancy (psychic forces, fortune telling)?	*Not at all*	*Occasionally*	*Sometimes*	*Often*	*All of the time*
19. Do you sometimes feel that other people are watching you?	*Not at all*	*Occasionally*	*Sometimes*	*Often*	*All of the time*
20. Have you felt that you are communicating with another person telepathically (by mind-reading)?	*Not at all*	*Occasionally*	*Sometimes*	*Often*	*All of the time*

Appendix L9. The Borderline Symptom List 23 (BSL-23)

Borderline Symptom List 23 (BSL-23)

Code: _____ **Date: _____**

Please follow these instructions when answering the questionnaire:In the following table you will find a set of difficulties and problems which possibly describe you. Please work through the questionnaire and decide how much you suffered from each problem in the course of the last week. In case you have no feelings at all at the present moment, please answer according to how you *think you might have felt*. Please answer honestly. **All questions refer to the last week. If you felt different ways at different times in the week, give a rating for how things were for you on average.**
Please be sure to answer each question.

In the course of last week...		not at all	a little	rather	much	very strong
1	It was hard for me to concentrate	**0**	**1**	**2**	**3**	**4**
2	I felt helpless	**0**	**1**	**2**	**3**	**4**
3	I was absent-minded and unable to remember what I was actually doing	**0**	**1**	**2**	**3**	**4**
4	I felt disgust	**0**	**1**	**2**	**3**	**4**
5	I thought of hurting myself	**0**	**1**	**2**	**3**	**4**
6	I didn't trust other people	**0**	**1**	**2**	**3**	**4**
7	I didn't believe in my right to live	**0**	**1**	**2**	**3**	**4**
8	I was lonely	**0**	**1**	**2**	**3**	**4**
9	I experienced stressful inner tension	**0**	**1**	**2**	**3**	**4**
10	I had images that I was very much afraid of	**0**	**1**	**2**	**3**	**4**
11	I hated myself	**0**	**1**	**2**	**3**	**4**
12	I wanted to punish myself	**0**	**1**	**2**	**3**	**4**
13	I suffered from shame	**0**	**1**	**2**	**3**	**4**
14	My mood rapidly cycled in terms of anxiety, anger, and depression	**0**	**1**	**2**	**3**	**4**
15	I suffered from voices and noises from inside or outside my head	**0**	**1**	**2**	**3**	**4**
16	Criticism had a devastating effect on me	**0**	**1**	**2**	**3**	**4**
17	I felt vulnerable	**0**	**1**	**2**	**3**	**4**
18	The idea of death had a certain fascination for me	**0**	**1**	**2**	**3**	**4**
19	Everything seemed senseless to me	**0**	**1**	**2**	**3**	**4**
20	I was afraid of losing control	**0**	**1**	**2**	**3**	**4**
21	I felt disgusted by myself	**0**	**1**	**2**	**3**	**4**
22	I felt as if I was far away from myself	**0**	**1**	**2**	**3**	**4**
23	I felt worthless	**0**	**1**	**2**	**3**	**4**

Now we would like to know in addition the quality of your **overall** personal state in the course of the last week. 0% means **absolutely down**, 100% means **excellent**. Please check the percentage which comes closest.

0%	**10%**	**20%**	**30%**	**40%**	**50%**	**60%**	**70%**	**80%**	**90%**	**100%**
(very bad) ◄										► **(excellent)**

BSL - Supplement: Items for Assessing Behavior

	During the last week.....	Not at all	once	2-3 times	4-6 times	Daily or more often
1	I hurt myself by cutting, burning, strangling, headbanging etc.	**0**	**1**	**2**	**3**	**4**
2	I told other people that I was going to kill myself	**0**	**1**	**2**	**3**	**4**
3	I tried to commit suicide	**0**	**1**	**2**	**3**	**4**
4	I had episodes of binge eating	**0**	**1**	**2**	**3**	**4**
5	I induced vomiting	**0**	**1**	**2**	**3**	**4**
6	I displayed high-risk behavior by knowingly driving too fast, running around on the roofs of high buildings, balancing on bridges, etc.	**0**	**1**	**2**	**3**	**4**
7	I got drunk	**0**	**1**	**2**	**3**	**4**
8	I took drugs	**0**	**1**	**2**	**3**	**4**
9	I took medication that had not been prescribed or if had been prescribed, I took more than the prescribed dose	**0**	**1**	**2**	**3**	**4**
10	I had outbreaks of uncontrolled anger or physically attacked others	**0**	**1**	**2**	**3**	**4**
11	I had uncontrollable sexual encounters of which I was later ashamed or which made me angry.	**0**	**1**	**2**	**3**	**4**

Please double-check for missing answers

WE THANK YOU VERY MUCH FOR YOUR PARTICIPATION!

PLEASE RETURN THE QUESTIONNAIRE TO YOUR THERAPIST

Appendix M. Clinical notes template

Version 1, September 2016

Exploring the impact of trauma and developmental factors in individuals with mental health difficulties

Template for Clinical Note Entry

Participation in Research Study: 'Exploring The Impact of Trauma and Developmental Factors in Individuals with Mental Health Difficulties'

Researcher: XXXXXXX

- Eligibility and Diagnostic Checklist [*Version X, date*] completed by / with the guidance from *XXXXXX* on *XX/XX/XX*.
- Participant Information Sheet [*Version X, date*] was given to the participant through *insert method of contact* on *XX/XX/XX*).
- (*If applicable*) Telephone conversation on *XX/XX/XX* with *XXXXXX*. The general study related content was discussed. *Insert any specific information about the conversation that could impact on their decision to participate, including the questions asked about the study and the content of the researcher responses to them.*
- The participant was given an opportunity to ask questions about the study – *insert information about key discussion points relating to the study and outcome of any these.*
  - The participant gave informed consent [*Version X, date*] to participate in the research study 'Exploring The Impact of Trauma and Developmental Factors in Individuals with Mental Health Difficulties' on *XX/XX/XX* at *XX:XX* am/pm. *XXXXXX* took consent, *XXXXXX* was present at the time informed consent was given.
  - Total duration of visit: *XX* minutes.

Version 1, September 2016

- On *XX/XX/XX* the study questionnaires were completed. *XXXXXX* was present throughout. Participation in this research study is now complete and the participant has been given an After Care sheet [*Version X, date*] in case they feel distressed following participation.

The Participant Information Sheet [*Version X, date*] and consent form [*Version X, date*] have been uploaded to the clinical notes. For further information and any queries about the study please contact the research team on:

(*insert researcher details here)*

Appendix N. Price Draw/Publication Sheet

Prize Draw/Publication

Version 1, September 2016

Exploring the impact of trauma and developmental factors in individuals with mental health difficulties

If you are interested in entering a prize draw for the opportunity to win one of four £20 Amazon vouchers OR you would like to receive information on the overall study findings, please inform the researchers of your decision and give them the relevant contact details.
Your email address will be stored securely and separately from the questionnaires you have completed.

Please tick

I would like to be entered into the prize draw ☐

I would like to receive information on the overall study findings ☐

Name: _____

Email / Postal Address: _____

Appendix O1. Aftercare sheet – clinical group, community participants

After Care Information Version 1, September 2016

Exploring the impact of trauma and developmental factors in individuals with mental health difficulties

After Care Information - Looking After Yourself

Thank you for being involved in this study, we really appreciate your time and commitment. If you feel you need to share something or talk to someone after completing the study there are people and organisations available to support you. We advise you to contact your care team or local General Practitioner (GP) or who can discuss any problems you may have and refer you to other services if necessary.

If you are experiencing any distress as a result of participating in this study, or for any other reason, we encourage you to contact members of your care team. Please follow your care team's advice and if out of hours, contact the out of hour's service on the details below:

Out of Hours Service: *insert local details here*

Monday – Friday 5pm – 9am, Weekends 24 hours.

If you are feeling in extreme crisis right now and you think you may act on suicidal thoughts, or you have seriously harmed yourself:

• go to a hospital A&E department and ask for help (if you need to, you can call 999 and ask for an ambulance).

Other organisations and helplines

The following organisations are available for you to access:

- The Samaritans (24 hours, 7 days a week)
  08457909090 www.samaritans.org
- Rethink (Mon-Fri, 9:30am-4pm)
  0300 5000 927 www.rethink.org
- Victim Support (Mon-Fri, 8pm-8am;Weekends, 24 hour service)
  0808 168 9111 www.vitctimsupport.org

Appendix O2. Aftercare sheet – clinical group, inpatient participants

After Care Information Version 1, September 2016

Exploring the impact of trauma and developmental factors in individuals with mental health difficulties

Aftercare Information - Looking After Yourself

Thank you for being involved in this study, we really appreciate your time and commitment. If you feel you need to share something or talk to someone after completing the study there are people and organisations available to support you. We advise you to contact your care team, ward staff or local General Practitioner (GP) who can discuss any problems you may have and refer you to other services if necessary.

If you are experiencing any distress as a result of participating in this study, or for any other reason, we encourage you to contact members of ward staff and/or your care team. Please follow your care team's advice and if out of hours, contact the out of hour's service on the details below:

Out of Hours Service: *insert local details here*

Monday – Friday 5pm – 9am, Weekends 24 hours.

If you are feeling in extreme crisis right now and you think you may act on suicidal thoughts, or you have seriously harmed yourself:

• go to a hospital A&E department and ask for help (if you need to, you can call 999 and ask for an ambulance).

Other organisations and helplines

The following organisations are available for you to access:

- The Samaritans (24 hours, 7 days a week)
  08457909090 www.samaritans.org
- Rethink (Mon-Fri, 9:30am-4pm)
  0300 5000 927 www.rethink.org
- Victim Support (Mon-Fri, 8pm-8am;Weekends, 24 hour service)
  0808 168 9111 www.vitctimsupport.org

Appendix O3. Aftercare sheet – non-clinical group (online version)

After Care Information Version 1, September 2016

Exploring the impact of trauma and developmental factors in individuals with mental health difficulties

Aftercare Information - Looking After Yourself

Thank you for being involved in this study, we really appreciate your time and commitment. If you feel you need to share something or talk to someone after completing the study there are people and organisations available to support you. We advise you to contact your local General Practitioner (GP) who can discuss any problems you may have and refer you to other services if necessary.

If you would like to self-refer to your local Mental Health team please use http://www.nhs.uk/Service-Search to find out your local service contact details.

If you are feeling in extreme crisis right now and you think you may act on suicidal thoughts, or you have seriously harmed yourself:

• go to a hospital A&E department and ask for help (if you need to, you can call 999 and ask for an ambulance).

Other organisations and helplines

The following organisations are available for you to access:

- The Samaritans (24 hours, 7 days a week)
  08457909090 www.samaritans.org
- Rethink (Mon-Fri, 9:30am-4pm)
  0300 5000 927 www.rethink.org
- Victim Support (Mon-Fri, 8pm-8am;Weekends, 24 hour service)
  0808 168 9111 www.vitctimsupport.org

Appendix P. Online procedure template

Version 1, September 2016

Exploring the impact of trauma and developmental factors in individuals with mental health difficulties

Online Procedure Template

Insert Participant Information Leaflet here

Insert Online Participation Consent Template here

1. To be entered into the competition to win one of four £20 vouchers, please indicate below. Please provide our email address to enable us to contact you.
    a. Yes, I would like to be entered
        i. Email:
    b. No, I would not like to be entered

Insert electronic Demographic Information Sheet here

Insert research questionnaires (with relevant guidance at the top of each questionnaire) here

Insert electronic Aftercare Sheet here

Would you like a copy of the After Care information to be emailed to you?

a. Yes, I would like the After Care information to be sent to me
    i. Email:
b. No, I would not the After Care information to be sent to me

Version 1, September 2016

Thank you for your participation in this research

The aim of the research is to our study is to get a better understanding of how childhood trauma can impact on mental health later in life.

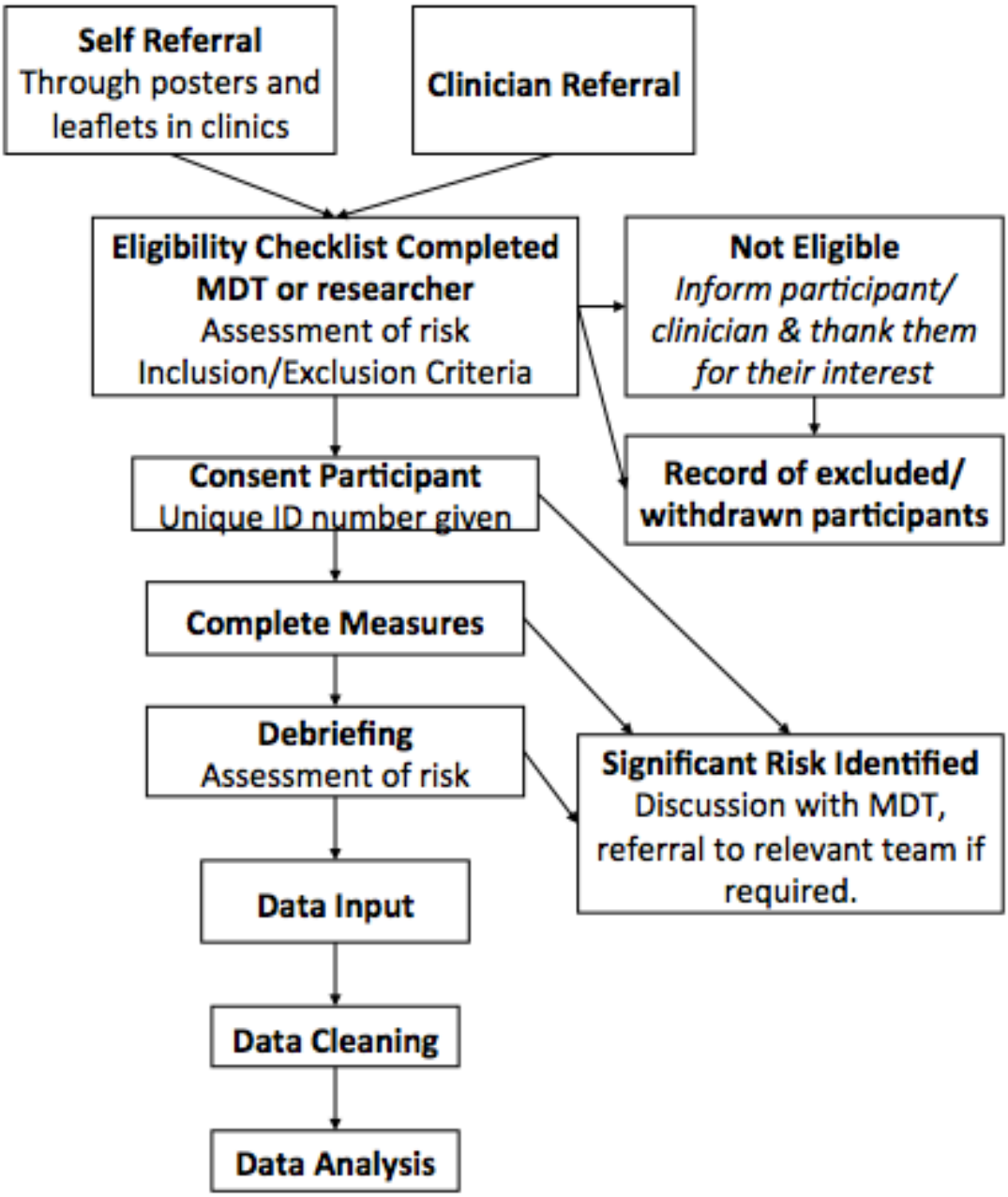
The results of this study will not include your name or any other identifying characteristics. This research did not use deception.

If you have any questions relating to the study please contact a member of the research team on the email address below. You may request a summary of the research findings of this project. If you would like to receive a summary of the findings please contact us on the email address below.

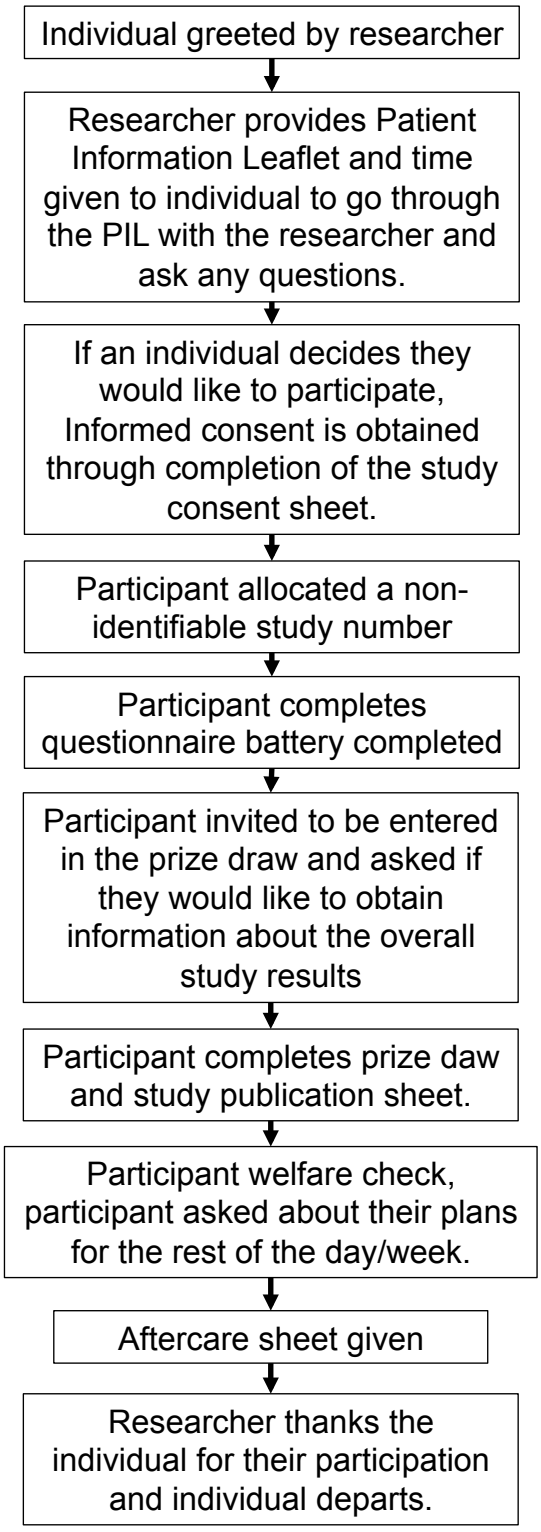
Insert study contact information

If you need to talk to someone about any distress which may have resulted from participating in this study please follow guidelines given in the After Care information sheet such as contacting your GP.

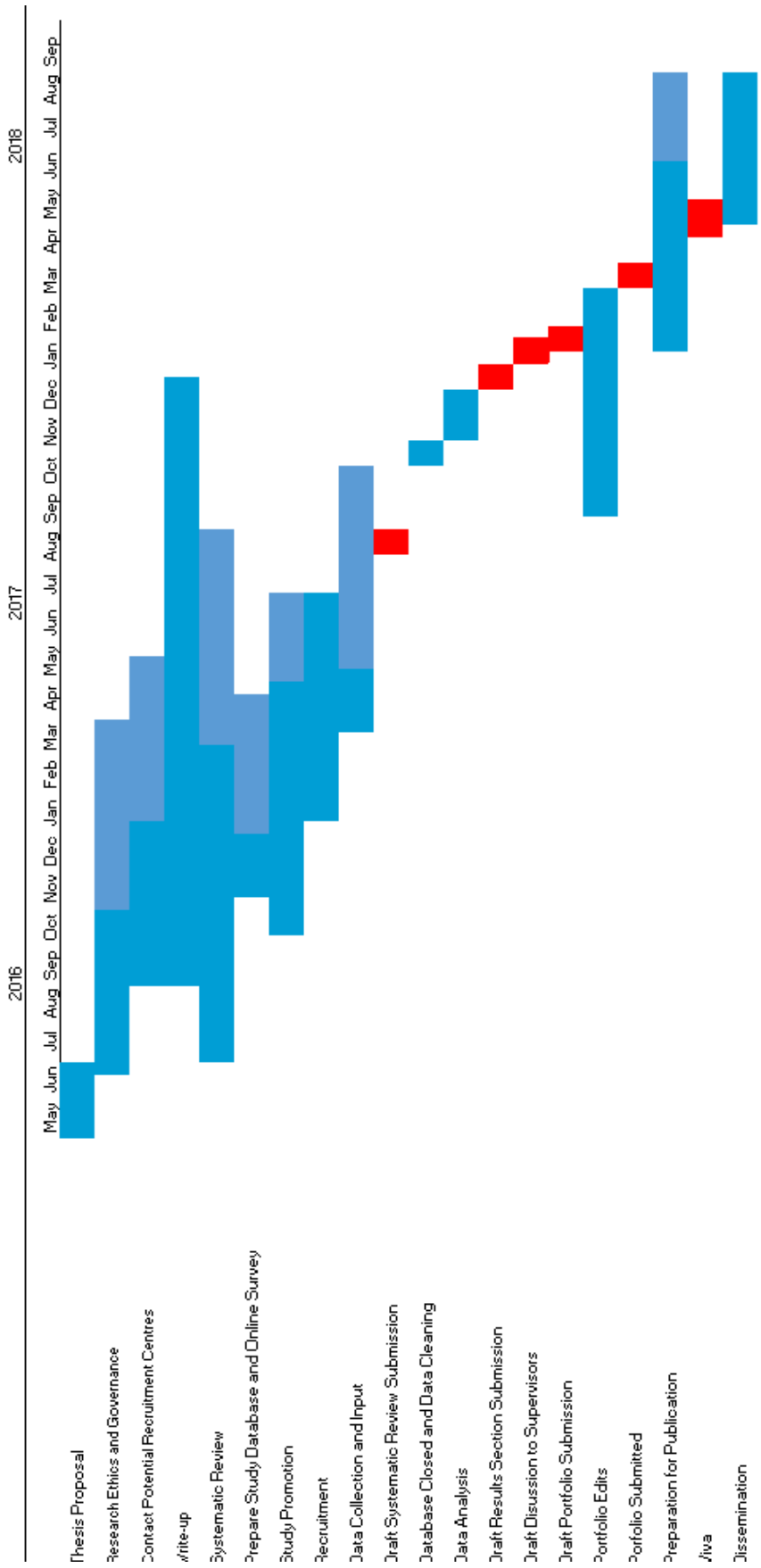
Appendix Q1. Diagrammatic presentation of participant recruitment



Appendix Q2. Diagrammatic presentation of procedure



Appendix R. Gantt Chart



Appendix S. Confirmation of Ethical Approval

NHS
Health Research Authority

Miss Catherine George
Trainee Clinical Psychologist
Cambridgeshire and Peterborough NHS Foundation Trust
Norwich Medical School
Faculty of Medicine and Health Sciences
University of East Anglia, Norwich
NR4 7TJ

Email: hra.approval@nhs.net

31 May 2017

Dear Miss George

Letter of HRA Approval

Study title:	**Exploring the Impact of Trauma and the Role of Attachment, Emotion Regulation, Post-Traumatic Stress Disorder, Trauma-Induced Cognitions and Dissociation in Individuals with Mental Health Difficulties**
IRAS project ID:	**213333**
REC reference:	**17/EE/0179**
Sponsor	**University of East Anglia**

I am pleased to confirm that **HRA Approval** has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications noted in this letter.

Participation of NHS Organisations in England

The sponsor should now provide a copy of this letter to all participating NHS organisations in England.

Appendix B provides important information for sponsors and participating NHS organisations in England for arranging and confirming capacity and capability. **Please read *Appendix B* carefully**, in particular the following sections:

- *Participating NHS organisations in England* – this clarifies the types of participating organisations in the study and whether or not all organisations will be undertaking the same activities
- *Confirmation of capacity and capability* - this confirms whether or not each type of participating NHS organisation in England is expected to give formal confirmation of capacity and capability. Where formal confirmation is not expected, the section also provides details on the time limit given to participating organisations to opt out of the study, or request additional time, before their participation is assumed.
- *Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria)* - this provides detail on the form of agreement to be used in the study to confirm capacity and capability, where applicable.

IRAS project ID	213333

Further information on funding, HR processes, and compliance with HRA criteria and standards is also provided.

It is critical that you involve both the research management function (e.g. R&D office) supporting each organisation and the local research team (where there is one) in setting up your study. Contact details and further information about working with the research management function for each organisation can be accessed from www.hra.nhs.uk/hra-approval.

Appendices

The HRA Approval letter contains the following appendices:

- A – List of documents reviewed during HRA assessment
- B – Summary of HRA assessment

After HRA Approval

The document *"After Ethical Review – guidance for sponsors and investigators"*, issued with your REC favourable opinion, gives detailed guidance on reporting expectations for studies, including:

- Registration of research
- Notifying amendments
- Notifying the end of the study

The HRA website also provides guidance on these topics, and is updated in the light of changes in reporting expectations or procedures.

In addition to the guidance in the above, please note the following:

- HRA Approval applies for the duration of your REC favourable opinion, unless otherwise notified in writing by the HRA.
- Substantial amendments should be submitted directly to the Research Ethics Committee, as detailed in the *After Ethical Review* document. Non-substantial amendments should be submitted for review by the HRA using the form provided on the HRA website, and emailed to hra.amendments@nhs.net.
- The HRA will categorise amendments (substantial and non-substantial) and issue confirmation of continued HRA Approval. Further details can be found on the HRA website.

Scope

HRA Approval provides an approval for research involving patients or staff in NHS organisations in England.

If your study involves NHS organisations in other countries in the UK, please contact the relevant national coordinating functions for support and advice. Further information can be found at http://www.hra.nhs.uk/resources/applying-for-reviews/nhs-hsc-rd-review/.

If there are participating non-NHS organisations, local agreement should be obtained in accordance with the procedures of the local participating non-NHS organisation.

IRAS project ID	213333

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website: http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/.

HRA Training

We are pleased to welcome researchers and research management staff at our training days – see details at http://www.hra.nhs.uk/hra-training/

Your IRAS project ID is **213333**. Please quote this on all correspondence.

Yours sincerely

Simon Connolly
Senior Assessor

Email: hra.approval@nhs.net

Copy to: *Ms Tracy Moulton, University of East Anglia*
Dr Bonnie Teague, Norfolk and Suffolk NHS Foundation Trust

IRAS project ID	213333

Appendix A - List of Documents

The final document set assessed and approved by HRA Approval is listed below.

Document	*Version*	*Date*
Copies of advertisement materials for research participants [PosterBPD]	1	01 September 2016
Copies of advertisement materials for research participants [PosterPsychosis]	1	01 September 2016
Copies of advertisement materials for research participants [PosterOnline-NonClinical]	1	01 September 2016
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [ll_letter_04.04.17]	1	04 April 2017
GP/consultant information sheets or letters [ClinicianInformationSheet]	1	01 September 2016
GP/consultant information sheets or letters [ClinicianInformationLetter]	1	01 September 2016
IRAS Application Form [IRAS_Form_11042017]		11 April 2017
Letter from sponsor [ll_letter_04.04.17]	1	04 April 2017
Non-validated questionnaire [DemographicInformationSheet]	1	01 September 2016
Other [ResearchCV_LiamGillian (collaborator)]	1	01 February 2017
Other [ResearchCV_MichellePainter (collaborator)]	1	01 February 2017
Other [ResearchCV_DeirdreWilliams (collaborator)]	1	01 February 2017
Other [ClinicalNoteTemplate]	1	01 September 2016
Other [Eligibility&DiagnosticChecklist-Clinical]	1	01 September 2016
Other [Eligibility&DiagnosticChecklistOnline-NonClinical]	1	01 September 2016
Other [SelfReferralTelephoneScript]	1	01 February 2017
Other [Screening&EnrolmentLog]	1	01 February 2017
Other [RiskManagementProtocol]	1	01 September 2016
Other [PrizeDrawAndPublicationSheet]	1	01 September 2016
Other [InspireFeedback]	1	01 September 2016
Other [SummaryOfChangesInspireFeedback]	1	01 September 2016
Other [Statement of activities]		
Other [Schedule of events]		
Other [AftercareSheet_ClinicalCommunity]	2 Highlighted	12 May 2017
Other [AftercareSheet_ClinicalInpatient]	2 Highlighted	12 May 2017
Other [AftercareSheet_NonClinical]	2 Highlighted	12 May 2017
Other [Precare Sheet_NonClinical]	1	12 May 2017
Other [Response to Ethics Committee Feedback]	1	12 May 2017
Participant consent form [ConsentForm_Clinical]	1	01 February 2017
Participant consent form [ConsentFormOnline-NonClinical]	1	01 February 2017
Participant information sheet (PIS) [ParticipantInformationSheet-Clinical]	2 Highlighted	12 May 2017
Participant information sheet (PIS) [Participant Information Sheet - NonClinical]	2 Highlighted	12 May 2017
Research protocol or project proposal [ThesisProtocol]	1	01 March 2017
Summary CV for Chief Investigator (CI) [ResearchCV_CatherineGeorge]	1	01 February 2017

IRAS project ID	213333

Summary CV for student [ResearchCV_DesireFurnes]	1	01 February 2017
Summary CV for supervisor (student research) [ResearchCV_SianCoker]	1	01 February 2017
Summary CV for supervisor (student research) [ResearchCV_JoanneHodgekins]	1	01 February 2017
Summary, synopsis or diagram (flowchart) of protocol in non technical language [OnlineProcedureTemplate-NonClinical]	1	01 September 2016
Summary, synopsis or diagram (flowchart) of protocol in non technical language [DiagrammaticPresentationOfProcedure]	1	01 September 2016
Validated questionnaire [BorderlineSymptomList-23]	1	01 September 2016
Validated questionnaire [DifficultiesInEmotionRegulationScale]	1	01 September 2016
Validated questionnaire [DissociativeExperiencesScale-II]	1	01 September 2016
Validated questionnaire [EarlyTraumaInventorySelfReport-ShortForm]	1	01 September 2016
Validated questionnaire [PsychosisAttachmentMeasure]	1	01 September 2016
Validated questionnaire [PTSDchecklistCivilianForm-ShortForm]	1	01 September 2016
Validated questionnaire [PostTraumaticCognitionsInventory]	1	01 September 2016
Validated questionnaire [SchizotypalSymptomsInventory-BriefVersion]	1	01 September 2016

IRAS project ID	213333

Appendix B - Summary of HRA Assessment

This appendix provides assurance to you, the sponsor and the NHS in England that the study, as reviewed for HRA Approval, is compliant with relevant standards. It also provides information and clarification, where appropriate, to participating NHS organisations in England to assist in assessing and arranging capacity and capability.

For information on how the sponsor should be working with participating NHS organisations in England, please refer to the, *participating NHS organisations, capacity and capability* and *Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria)* sections in this appendix.

The following person is the sponsor contact for the purpose of addressing participating organisation questions relating to the study:

Name: Tracy Moulton
Email: Researchsponsor@uea.ac.uk

HRA assessment criteria

Section	HRA Assessment Criteria	Compliant with Standards	Comments
1.1	IRAS application completed correctly	Yes	No comments
2.1	Participant information/consent documents and consent process	Yes	Requested by assessor that IRAS number be added to the information sheets and consent forms.
3.1	Protocol assessment	Yes	No comments
4.1	Allocation of responsibilities and rights are agreed and documented	Yes	Statement of activities will form agreement between sponsor and participating NHS organisations.
4.2	Insurance/indemnity arrangements assessed	Yes	Where applicable, independent contractors (e.g. General Practitioners) should ensure that the professional indemnity provided by their medical defence organisation covers the activities expected of them for this research study
4.3	Financial arrangements assessed	Yes	No external funding application made for this doctorate study.

IRAS project ID	213333

Section	HRA Assessment Criteria	Compliant with Standards	Comments
5.1	Compliance with the Data Protection Act and data security issues assessed	Yes	No comments
5.2	CTIMPS – Arrangements for compliance with the Clinical Trials Regulations assessed	Not Applicable	
5.3	Compliance with any applicable laws or regulations	Yes	No comments
6.1	NHS Research Ethics Committee favourable opinion received for applicable studies	Yes	No comments
6.2	CTIMPS – Clinical Trials Authorisation (CTA) letter received	Not Applicable	
6.3	Devices – MHRA notice of no objection received	Not Applicable	
6.4	Other regulatory approvals and authorisations received	Not Applicable	

Participating NHS Organisations in England

This provides detail on the types of participating NHS organisations in the study and a statement as to whether the activities at all organisations are the same or different.
At participating NHS organisations potential participants will be approached with information about the study. The researchers may also use NHS facilities for the study appointments. The Chief Investigator or sponsor should share relevant study documents with participating NHS organisations in England in order to put arrangements in place to deliver the study. The documents should be sent to both the local study team, where applicable, and the office providing the research management function at the participating organisation. For NIHR CRN Portfolio studies, the Local LCRN contact should also be copied into this correspondence. For further guidance on working with participating NHS organisations please see the HRA website. If chief investigators, sponsors or principal investigators are asked to complete site level forms for participating NHS organisations in England which are not provided in IRAS or on the HRA website, the chief investigator, sponsor or principal investigator should notify the HRA immediately at hra.approval@nhs.net. The HRA will work with these organisations to achieve a consistent approach to information provision.

IRAS project ID	213333

Confirmation of Capacity and Capability

This describes whether formal confirmation of capacity and capability is expected from participating NHS organisations in England.
Participating NHS organisations in England **will be expected to formally confirm their capacity and capability to host this research.** • Following issue of this letter, participating NHS organisations in England may now confirm to the sponsor their capacity and capability to host this research, when ready to do so. How capacity and capacity will be confirmed is detailed in the *Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria)* section of this appendix. • The Assessing, Arranging, and Confirming document on the HRA website provides further information for the sponsor and NHS organisations on assessing, arranging and confirming capacity and capability.

Principal Investigator Suitability

This confirms whether the sponsor position on whether a PI, LC or neither should be in place is correct for each type of participating NHS organisation in England and the minimum expectations for education, training and experience that PIs should meet (where applicable).
The researchers will be responsible for conducting all research activities under academic supervision. A local collaborator may be required from NHS trusts to arrange access to NHS facilities for researchers and support conduct of study. GCP training is not a generic training expectation, in line with the HRA statement on training expectations.

HR Good Practice Resource Pack Expectations

This confirms the HR Good Practice Resource Pack expectations for the study and the pre-engagement checks that should and should not be undertaken
Where existing arrangements are not in place university researchers will require a letter of access to complete research activities within NHS organisations. It will need to be confirmed that appropriate DBS checks and occupational health checks have taken place.

Other Information to Aid Study Set-up

This details any other information that may be helpful to sponsors and participating NHS organisations in England to aid study set-up.
• The applicant has indicated that they do not intend to apply for inclusion on the NIHR CRN Portfolio.